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"We Surpass the Beautiful Waters of Other Cities by the Abundance of Ours": Reconciling Function and Decoration in Late Antique Fountains[1]

Compared to their predecessors of imperial times, public fountains of Late Antiquity have triggered only a negligible interest among scholars. This study presents a current overview on the topic. It focuses on newly built fountains and on the visual and functional maintenance of earlier ones in Late Antiquity. Through a combination of architectural, decorative, and technical data, the authors address the overall meaning of both monumental and modest public fountains in the late antique cityscapes of the eastern Mediterranean. A review of late antique fountain architecture in the light of past realizations demonstrates that, even if the trend of grand nymphaea was still present, new investments were more modest and/or cost-effective. This pragmatism also reveals itself in the practice of converting existing monuments into public fountains. The active preservation of older fountains shows an uninterrupted concern for their functional continuity and the upkeep of their pleasant appearance. Besides architectural repairs and the preservation or update of statuary programs, the various alterations made to the hydraulic apparatus demonstrate a great flexibility in the way water was made available to consumers. Even if some of these alterations may at first sight seem negative, in many cases they can also be interpreted as a willingness to increase the comfort of users and to maintain good water quality. Sometimes, however, the changes made to older fountains led to the almost total disappearance of their functions, even if their decorative facade could be maintained. Many of them were turned into genuine castella aquarum or redistribution stations. The wide array of functional alterations

[1] This study synthesizes the doctoral research of the authors, viz., Ine Jacobs, *Aesthetic Maintenance of Civic Space. The "Classical" City from the 4th to the 7th c. AD*, *Orientalia Lovaniensia Analecta* 193 (Leuven, 2011); Julian Richard, *The "Nymphaea" of the Greek East as Testimonies of the Religious and Social Life, and of Urban Profiling and Characterization in the Eastern Roman Provinces* (diss. Katholieke Universiteit Leuven, 2008). This research was supported by the Belgian Program on Interuniversity Poles of Attraction, the Research Fund of the K.U. Leuven, the Research Foundation-Flanders, and a Methusalem Grant from the Flemish Ministry for Science Policy.

analyzed here testifies to a new culture of water management in many late antique cities. Water resources became increasingly diversified through the dissemination of fountains and basins of various sizes in the most densely populated areas. The aesthetic maintenance of earlier fountains, the pragmatic investment in new ones, and the willingness to improve comfort and to bring water resources closer to consumers all demonstrate the existence of a vivid late antique fountain culture.

Both their decorative facades and the cooling effect of flowing water caused fountains to have an extremely pleasing effect on the hot and crowded cities of the eastern Mediterranean during the Imperial period. Wayfarers could enjoy the view, drink the water, rest on the railings and steps, and relax for a moment before moving on.[2] Libanius testified to the ongoing importance of water in the fourth century when he praised the abundant water resources of his native city Antioch-on-the-Orontes, claiming, "We surpass the beautiful waters of other cities by the abundance of ours."[3] In spite of this praise, late antique fountains have hitherto aroused little interest among scholars, although a multitude of studies have been devoted to their imperial predecessors.[4] General overviews on newly built late antique fountains as well as on the maintenance of earlier examples are still few in number. The majority of existing studies tend to focus on monumental fountains in the original building phase, dismissing subsequent structural, decorative, and technical alterations or vaguely designating them as occurring in a "Byzantine building phase." Yet, because these fountains were still functioning well into Late Antiquity, they remained an integral part of the cityscape for the centuries that followed.

[2] A. Trevor-Hodge, *Roman Aqueducts and Water Supply* (London, 1992), 10; William MacDonald, *The Architecture of the Roman Empire*, 2. *An Urban Appraisal* (New Haven/London, 1986), 63, 99; Arthur Segal, *From Function to Monument: Urban Landscapes of Roman Palestine, Syria and Provincia Arabia* (Oxford, 1997), 167; Claudia Dorl-Klingenschmid, *Prunkbrunnen in kleinasiatischen Städten. Funktion im Kontext*, (Munich, 2001), 116–19.

[3] Libanius, *Or.* 11.246–47.

[4] Pierre Aupert, *Le nymphée de Tipasa et les nymphées et "Septizonia" nord-africains* (Rome, 1974); Susan E.C. Walker, *The Architectural Development of Roman Nymphaea in Greece* (diss. University of London, 1979); Eadem, "Roman Nymphaea in the Greek World," in S. Macready, F.H. Thompson, eds., *Roman architecture in the Greek world* (London, 1987), 60–71; Pierre Gros, *L'architecture romaine: du début de IIIe siècle av. J.-C. à la fin du Haut-Empire, 1. Les Monuments publics* (Paris, 1996), 418–44; Sandrine Agusta-Boularot, *La fontaine, la ville et le Prince. Recherches sur les fontaines monumentales et leur fonction dans l'urbanisme impérial, de l'avènement d'Auguste au règne des Sévères* (diss. Université de Provence Aix-Marseille 1, Aix-en-Provence, 1997); Dorl-Klingenschmid, *Prunkbrunnen*; Richard, *Nymphaea of the Greek East*; Brenda Longfellow, *Roman Imperialism and Civic Patronage: Form, Meaning and Ideology in Monumental Fountain Complexes* (New York, 2011).

Recently, the renewed interest in the evolution of the urban fabric and water supply networks in Late Antiquity—for instance at Aphrodisias, Sagalassos (Fig. 1), Ephesus (Fig. 2), Laodicea, and Gortyn (Fig. 3)—has resulted in the publication of studies on previously unknown monumental fountains as well as in the restudy of others. This article intends to combine the results of such isolated studies and to present a comprehensive overview of fountains of Late Antiquity in the eastern Mediterranean, with a strong focus on Asia Minor and Greece. The aim is to outline the appearance of newly built fountains as well as to sketch the energy invested in the maintenance of earlier ones. Moreover, the utilitarian function of fountains and their meaning within the late antique cityscape will be examined. Finally, we wish to address broader issues such as the presumed reduced water supply reported in some cities of Late Antiquity and the importance of fountains for the decorative aspect of the urban fabric.

As fountains were undoubtedly among the most attractive monuments of a Roman city, we will first devote attention to their architectural and decorative aspects. We will pinpoint both continuities and ruptures in the way that fountains were conceived between Roman and late Roman times. First of all, structures belonging to the well-known type of monumental-facade fountains, commonly designated as "nymphaea," will be considered. These comprise older monuments that were actively preserved (either through alterations made to their architectural and figural decoration or through changes affecting their water supply), late antique fountains built in the same tradition, and fountains converted from other monuments into similar decorative water structures. Secondly, the less spectacular—and therefore lesser-known—closed fountain-house, a building type that reappeared in Late Antiquity, will be discussed.[5]

Because fountains were not merely decorative displays but remained also fundamental to a city's water supply after the fourth century, their utilitarian function warrants discussion. The majority of existing fountains saw more or less drastic alterations to their hydro-technical apparatus. These alterations will first be considered at the level of the fountain, before extending examination into the wider perspective of urban water management. A study addressing their size, architecture, and decoration as well as their various hydraulic properties should make it possible to assess whether or not water management in Late Antiquity differed from that of earlier centuries.

[5] In addition, water is known to have played an important role in Christian ritual, especially in baptisteries, and therefore became an important element in Christian architecture. Its decorative properties also were validated by fountains in church atria, which could range from a cantharus over a water outlet in a niche and square basins, to complete fountains (Jacobs, *Aesthetic Maintenance*, 360–64).

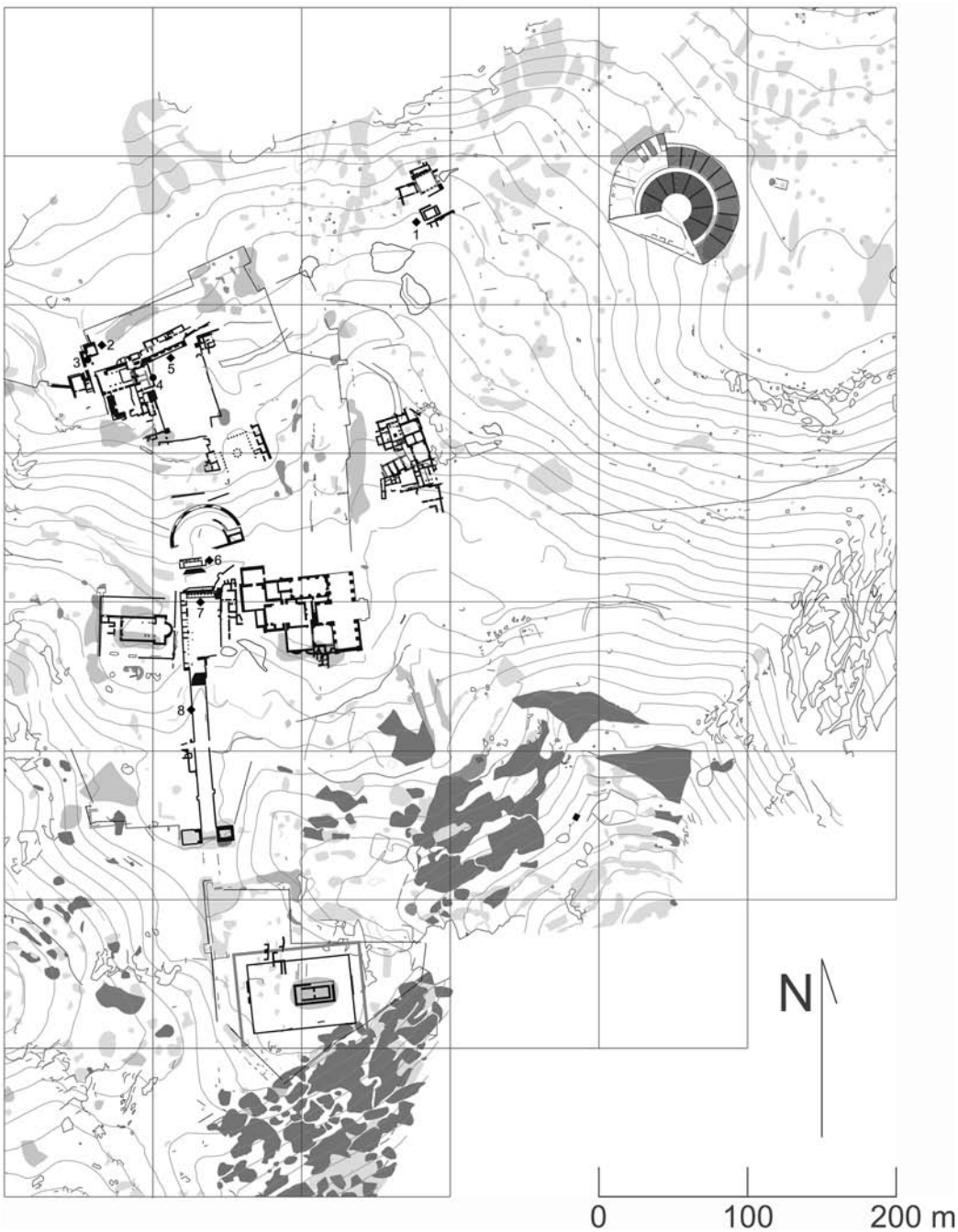

Fig. 1: Map of Sagalassos with indication of fountains (◆), nymphaea (◆) and basins (●). 1. Doric fountain; 2. Byzantine fountain-house at the north-west heroön; 3. Collection installations at the north-west heroön; 4. Basin in the west portico of the upper agora; 5. Antonine nymphaeum; 6. Hadrianic nymphaeum; 7. Severan nymphaeum; 8. Street fountain along the colonnaded street. (Map © Sagalassos Archaeological Research Project).

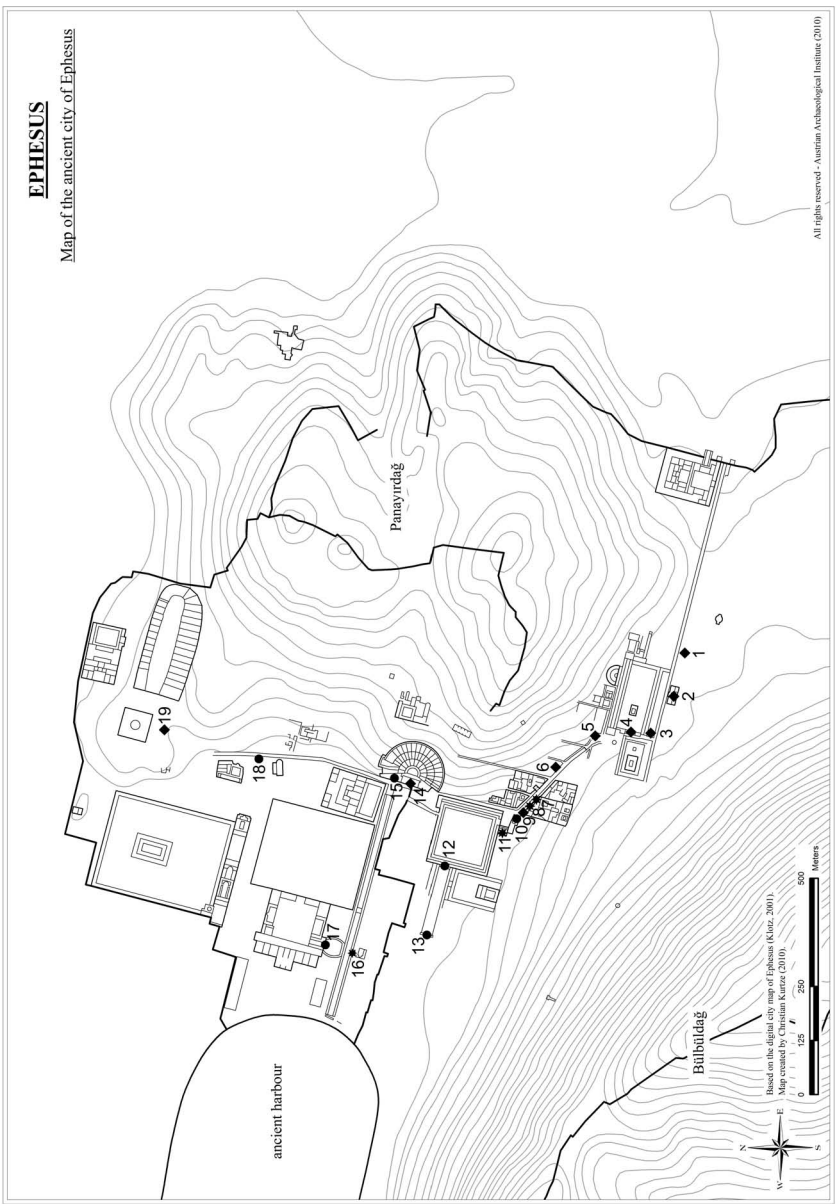

Fig. 2: Map of Ephesus with indication of nymphaea (◆), converted monuments () and basins (●). 1. Straßenbrunnen; 2. Fontäne; 3. Hydrekdocheion of C. Laecanius Bassus; 4. Apsisbrunnen; 5. Hydreion; 6. Nymphaeum Traiani; 7. Hexagon; 8. Oktogon; 9. Heroön; 10. Gate of Hadrian; 11. Celsus library; 12. West gate of the tetragonos agora; 13. Hellenistic fountain-house near the theatre; 14. Basin at the theatre; 15. Exedra along the arkadiane; 16. Middle harbor gate; 17. Basins in the forecourt of the harbor baths; 18. Basin along theatre street; 19. Stadium fountain. **Credit line to come.**

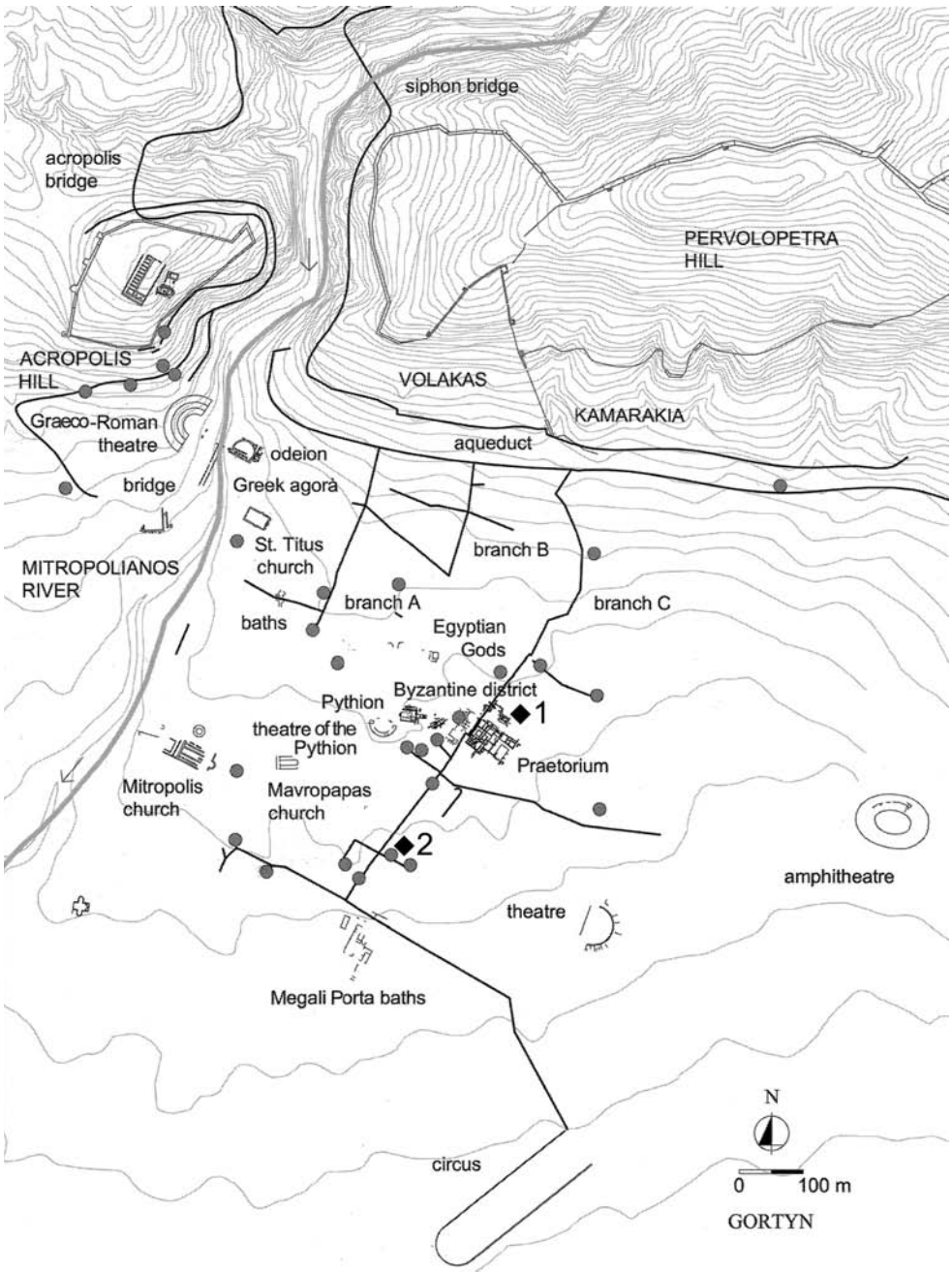

Fig. 3: Map of Gortyn with indication of the water network, fountains and nymphaea (◆). 1. Nymphaeum F25; 2. Nymphaeum F8 (From Giorgi, "Water Technology at Gortyn in the 4th–7th c. AD*," in Lavan, Zanini, Sarantis, eds.,* Technology in Transition AD 300–650 *(Leiden: Brill, 2007), p. 309, no. 9, reproduced with permission).*

The study of late antique water infrastructure and architecture presents specific difficulties. Some of these are due to the nature of the evidence, others to research interests and strategies. The aforementioned lack of interest in later construction phases sometimes has caused the partial or total removal of later additions. Moreover, during older excavations, particularly those undertaken prior to the second half of the twentieth century, little attention was paid to stratigraphic context. This has often resulted in a dramatic loss of information concerning later alterations, and of late antique building phases in particular.

Many fountains underwent decorative, structural, and technical alterations of variable importance during their lifespan. Because of the nature of the transformations, such changes can seldom be connected to stratigraphic deposition of sediments and can often only be dated stylistically or not at all. Modifications of the hydraulic apparatus, ranging from cuttings, grooves, and holes visible on the parapet slabs, to the addition of walls or the total closing off of drawing basins, are almost impossible to date. Such interventions often were humble in character, which may explain why they are rarely mentioned in publications. And yet, it is these aspects that illustrate the vivid character of fountains. Indeed, fountains were not static realities following their construction, but instead were constantly adapted to meet the utilitarian needs and daily expectations of their users. Moreover, small-scale changes to the original architecture are enlightening when estimating absolute quantities of discharged water, or, in other words, to answer questions concerning water shortage and surplus.

Fountain Architecture in Late Antiquity

Fountains in the "Imperial" Tradition

Since the Greek Archaic Age, fountain-houses featured a plain water basin inside an enclosed building. Gaining in monumentality from the Classical period onward, they increasingly took the shape of a long, columnar, stoa-like building with an elongated basin occupying either part or the totality of the inside space. In Hellenistic times, these so-called stoa-type fountain-houses sometimes reached impressive sizes and obviously became a necessary amenity of any well-to-do city in the Aegean region.

The early imperial period then saw the appearance of distinct types of grand public fountains, commonly designated as nymphaea. These were not only functional, but also highly ornamental structures. Their lavish columnar facades were enhanced by an abundant statuary display. The shape most typical to the Roman age was the so-called tabernacle architecture, consisting of an alternation of projecting *aediculae* and recesses spread over one or two, and

exceptionally even three, storeys.[6] The water, used as a decorative and architectural element, came running down the facade as a cascade or projected out of waterspouts into one or more open-air drawing basins located in front, which functioned as reflecting pools for the columnar architecture behind. Although the details of the architectural form of a Roman fountain could differ widely, they were generally subdivided into two broad sub-categories: sigma-shaped nymphaea and nymphaea with a straight facade.[7] In Asia Minor, the straight facade fronted by a rectangular basin, which could be framed by projecting lateral wings, was favored, although the sigma-shaped nymphaeum with one or three semicircular exedrae was not uncommon.[8] In the Levant, the sigma-shaped nymphaea became more popular. This was also the case in continental Greece from the early second century onward.[9] These buildings often reached impressive lengths. An average-sized sigma-shaped nymphaeum would be between 10m and 15m long, whereas fountains with straight facades generally had a minimal length of 20m and in more than one instance reached extraordinary dimensions. For instance, the Tritons' nymphaeum in Hierapolis with its length of ca.65m is currently the largest known Roman fountain in the eastern Mediterranean.[10] The construction of these monumental nymphaea continued until at least the first two decades of the third century.[11] After a gap of several decades, building enterprises were resumed at the end of the century. The fountains realized in Late Antiquity resembled their predecessors in certain aspects but also displayed notable differences.

[6] Christof Berns, "Frühkaiserzeitliche Tabernakelfassaden. Zum Beginn eines Leitmotivs urbaner Architektur in Kleinasien," in Christof Berns, Marc Waelkens, eds., *Patris und Imperium. Kulturelle und politische Identität in den Städten der römischen Provinzen Kleinasiens in der frühen Kaiserzeit. Kolloquium Köln, November 1998* (Leuven, 2002), 159–74.

[7] Franz Glaser, "Fountains and Nymphaea," in Örjan Wikander, ed., *Handbook of Ancient Water Technology* (Leiden, 2000), 416–36, at 439–46; Dorl-Klingenschmid, *Prunkbrunnen*, 39–60.

[8] Dorl-Klingenschmid, *Prunkbrunnen*, 39.

[9] Walker, *Architectural Development*; Idem, "Roman Nymphaea"; Sandrine Agusta-Boularot, "Fontaines et fontaines monumentales en Grèce de la conquête romaine à l'époque flavienne: permanence ou renouveau architectural ?", in *Constructions publiques et programmes édilitaires en Grèce entre le IIe siècle av. J.-C. et le Ier siècle ap. J.-C.* (Athens, 2001), 167–236.

[10] Dorl-Klingenschmid, *Prunkbrunnen*, 196–197, cat. no. 35; Lorenzo Campagna, "Monumental fountains at Hierapolis of Phrygia during the Severan Age," in Gilbert Wiplinger, ed., *Cura Aquarum in Ephesus: Proceedings of the Twelfth International Congress on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Ephesus/Selçuk, Turkey, October 2–10, 2004* (Leuven/Paris/Dudley, MA, 2006), 387–96.

[11] For the nymphaeum of Miletus, see Julius Hülsen, *Das Nymphaeum* (Berlin/Leipzig, 1919); Maurice Sartre, *L'Orient romain. Provinces et sociétés provinciales en Méditerranée Orientale d'Auguste aux Sévères (31 avant J.-C.- 235 après J.-C.)* (Paris, 1991), 147–48; 166; Gerhard Tuttahs, "Vorbericht zur Wasserversorgung Milets im Einzugsgebiet des Nymphaüm-Aquäduktes in Römischer Zeit (1. Und 2. Jh. n. Ch.)," *AA* (1997), 163–79; Dorl-Klingenschmid, *Prunkbrunnen*, 215–16, cat. no. 64.

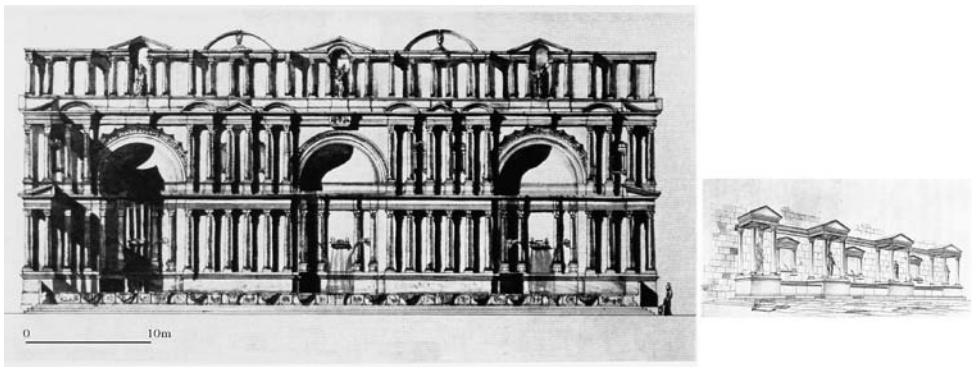

Fig. 4: The nymphaeum of the main gate and the aediculated nymphaeum at Side on the same scale (Photo after Mansel 1963: 57, fig. 37 and 68, fig. 49, reproduced with permission).

Until quite late in time, traditional aediculated nymphaea were still erected anew. At Side, the aediculated nymphaeum constructed in the late third century still possessed four *aediculae* fronted by Corinthian columns carrying triangular gables.[12] Even 250 years later, during the Justinianic period, a similar fountain was constructed at a small plaza on the western end of the peninsula of Side[13] and another one adorned a small plaza at Antioch-on-the-Orontes.[14] However, as these fountains possessed only one storey and their length did not exceed 20m, they no longer matched the monumental structures of previous centuries in size or complexity (Fig. 4). The aediculated nymphaeum at Side was already quite modest, with a length of 17.5m and a width of only 1.12m. Nymphaeum hh at Side and the Justinianic nymphaeum at Antioch were unmistakably tiny, with lengths of 12m and 8.50m respectively. It is very likely that the newly constructed nymphaea at Constantinople, the Constantinian nymphaeum on the forum of Constantine and the nymphaeum on the Forum Tauri, already being built during the reign of Valens, were grander in size.[15] Unfortunately, they are known mostly from literary sources and their exact appearance

[12] Arif M. Mansel, *Die Ruinen von Side* (Berlin, 1963), 66–70; Johannes Nollé, *Side im Altertum. Geschichte und Zeugnisse, 1. Geographie-Geschichte-Testimonia. Griechische und lateinische Inschriften* (Bonn, 1993), 7–12; Clive Foss, "The Cities of Pamphylia in the Byzantine Age," in Clive Foss, *Cities, Fortresses and Villages of Byzantine Asia* Minor (Aldershot, 1996), article no. 4, 27; Dorl-Klingenschmid, *Prunkbrunnen*, 242, cat. no. 105.

[13] Arif M. Mansel, "Bericht über die Ausgrabungen in Pamphylien in der Jahren 1946–1955," *AA* (1956), 41–42; Idem, *Side*, 172; Foss, "Cities of Pamphylia," article no. 4, 39; Dorl-Klingenschmid, *Prunkbrunnen*, 246, cat. no. 109.

[14] Jean Lassus, *Les Portiques d'Antioche* (Princeton, 1972), 46.

[15] See Franz. A. Bauer, *Stadt, Platz und Denkmal in der Spätantike. Untersuchungen zur Ausstattung des öffentlichen Raums in den spätantiken Städten Rom, Konstantinopel und Ephesos*

remains uncertain.[16] The only archaeologically attested late antique nymphaeum of large size was nymphaeum F1 at Perge, established at the back of the theatre's *scaenae frons*.[17] Even though it was only 5.3m deep, this monument had a length of 59.45m, and with its two storeys achieved a height of more than 12m. Although nowadays only the semicircular exedrae in its back wall are preserved, this fountain was also likely to have been fronted by tabernacle architecture in the Corinthian order. Both the shape and size of this monument may have been the result of its function as a massive buttress supporting the theatre's *scaenae frons,* which was probably damaged during an earthquake.[18]

Existing Monumental Architecture Converted into Fountains

Besides completely new fountains, there are many examples of pre-existing, non-water related monuments being converted into decorative water displays, often resembling traditional fountains with a straight facade. Occasionally, ordinary colonnades and porticoes bordering a street or square were deemed suited for this purpose, as was the case in the theater street at Ephesus and on the upper agora of Sagalassos. At Ephesus, the back wall of the west colonnade of the theatre street was walled up with brick masonry at an undated moment. The water basin was installed on top of the street surface in front of this new wall (Fig. 2). The late date of this arrangement is suggested by the position of the basin, on top of the street and thus partially blocking the flow of traffic, and confirmed by the integration of reused architectural fragments. Reliefs taken from the temple of the Sebastoi were placed on top of a molding decorated with a sequence of alternating open and closed palmettes turned upside down (Fig. 5).[19] At Sagalassos, a 15m long stretch of columns belonging to the west portico of the upper agora was reused as decorative background for a water basin (Figs. 1, 6).[20] In this instance they were not walled up and the area behind them remained visible. In order to upgrade the appearance of the new fountain, the division walls of rooms installed in the portico in an earlier phase were again dismantled and the back wall of the

(Mainz, 1996),171; Cyril Mango, *Le développement urbain de Constantinople (IVe-VIIe siècles*) (Paris, 1985), 9–18; Bauer, *Stadt, Platz und Denkmal*, 193, 195–196.

[16] The nymphaeum on the forum of Constantine is mentioned in Cedrenus, 1.610.14, Zonaras, 3.125.5, and the *Notitia urbis Constantinopolitanae* (233), which situates it in Regio V. Eusebius, *Vita Constantini* 3.49, described the sculptural decoration of the monument. The nymphaeum on the Forum Tauri was located in Regio X: *Notitia urbis Constantinopolitanae* (238); construction in 372/373: Cedrenos, 1.543.16, and Valens Socrates, *OG* 67, 477A.

[17] Arif M. Mansel, "Die Nymphäen von Perge," *Istanbuler Mitteilungen* 25 (1975), 371–72; Dorl-Klingenschmid, *Prunkbrunnen*, 226–28, cat. no. 84.

[18] Mansel, "Nymphäen," 371–72.

[19] Jacobs, *Aesthetic Maintenance*, 241–42.

[20] Ibid.

Fig. 5: The fountain on top of the theatre street at Ephesus (Photo: Authors).

new large open space was clad with marble slabs. The less visible side walls were given a plastered decoration. As the basin did not possess a back wall, the pedestal bases of the portico would have remained visible underneath the water surface, whereas they were hidden behind large and undecorated reused slabs at Ephesus. Overall, the basin at Sagalassos was less decorative than that of Ephesus, having no architectural or figurative decoration. Nevertheless, the care of construction is noticeable in the differential use of building elements, with a row of orthostats on the building's exterior and smaller rubble with other reused elements on the interior. A small apsidal extension was located in the center of the eastern parapet.

The conversion of existing decorative structures, such as gates and honorific monuments, into decorative water displays was far more common than the occasional adaptation of colonnades and porticoes. The most famous such monument was undoubtedly the Celsus library at Ephesus (Figs. 2, 7).[21] The

[21] Clive Foss, *Ephesus after Antiquity. A Late Antique, Byzantine and Turkish City* (Cambridge, 1979), 65; Bauer, *Stadt, Platz und Denkmal*, 280–82; Dorl-Klingenschmid, *Prunkbrunnen*, 191, cat. no. 29.

Fig. 6: The basin on the upper agora of Sagalassos with a row of columns serving as facade (Photo: © Sagalassos Archaeological Research Project).

original edifice had been damaged during a fire, most likely as the result of an earthquake in 262, and was never restored. Reconstruction of the entire area, including the library square, took place in the late fourth or early fifth century, when the Embolos was promoted as the new commercial, social, and political center of the city.[22] The library facade was restored and converted into the backdrop of a 21m long and 5.6m wide basin built on top of the lowest step of the monument, extending to the western apses of the south gate of the agora. The actual conversion was not an extremely labor-intensive

[22] Hilke Thür, "Die spätantike Bauphase der Kuretenstrasse," in Renate Pillinger, Otto Kresten, Fritz Krinzinger, Eugenio Russo, eds., *Efeso paleochristiana e bizantina/ frühchristliches und byzantinisches Ephesos* (Vienna, 1999), 107.

Fig. 7: The façade of the Celsus library with remains of the late antique basin in front and a detail of the central drawing basin (Photo: Authors).

operation. It involved only the construction of the front wall of the basin and its dressing with reused reliefs taken from the "Parthian monument." In the mid- or late fifth century, the agora gate of the south agora at Aphrodisias was converted into an imposing nymphaeum in a similar manner.[23] A water basin consisting of a retaining wall built with brick and reused elements set around

[23] Pascale Linant de Bellefonds, "The Mythological Reliefs from the Agora Gate," in Charlotte Roueché, R.R.R. Smith, eds., *Aphrodisias Papers 3. The Setting and Quarries, Mythological and Other Sculptural Decoration, Architectural Development, Portico of Tiberius, and Tetrapylon* (Ann Arbor, 1996), 174–86; Christopher Ratté, "New Research on the Urban Development of Aphrodisias in Late Antiquity," in David Parrish, ed., *Urbanism in Western Asia Minor: New Studies on Aphrodisias, Ephesos, Hierapolis, Pergamon, Perge and Xanthos* (Portsmouth, RI, 2001), 123; Charlotte Roueché, *Aphrodisias in Late Antiquity: The Late Roman and Byzantine Inscriptions*, rev. 2nd ed. <http://insaph.kcl.ac.uk/ala2004> (London, 2004), 38, 39, 40

Fig. 8: Reused blocks in the parapet of the agora gate nymphaeum at Aphrodisias (Photo: Authors).

a brick-paved pool was installed in front of the existing two-storey facade (Fig. 8). The basin reached an impressive length of ca.50m,[24] making it comparable to the late Antonine nymphaeum of the main gate at Side. However, as mentioned above, late antique fountains with such grand dimensions were rather exceptional. On the whole, one chose to convert small-scale monuments. For instance, the so-called nymphaeum at Skythopolis may not only have been completely reconstructed in the second half of the fourth century, it is also likely to have received its water supply at that time.[25]

In other cases, the original monuments were not only converted, but also moved. These structures, all of which were visually pleasing and small

[24] Linant de Bellefonds, "Agora Gate"; Dorl-Klingenschmid, *Prunkbrunnen*, 173–74, cat. no. 9.

[25] Gideon Foerster, Yoram Tsafrir, "The Beth Shean Project: Center of Ancient Beth Shean-North," *ESI* 6 (1987/88), 27–28; Idem, "The Bet She'an Excavation Project (1989–1991)," *ESI* 11 (1993), 15.

Fig. 9: The fountain near 'Gaudin's gymnasium' at Aphrodisias after excavation (Collignon 1906: fig. 2).

in scale, were dismantled, transported stone by stone, and rebuilt in their new location, which was always highly visible. Often, a water basin was added in front of the monuments. For instance, the fountain near "Gaudin's gymnasium" at Aphrodisias consisted of a dislocated temple facade (a tetrastyle facade with four monolithic unfluted columns crowned by Corinthian capitals) with a large late antique water basin located behind it and a second narrow and more practical drawing basin placed in front (Fig. 9).[26] This fountain was located not only along one of the major east-west streets of Aphrodisias, but also in the vista of a north-south street. Although the opposite side has not yet been excavated, and even though the street has been situated somewhat further to the east in the hypothetical rigid plan of the city, the presence of such a street on this location is implied by corners present in the colonnades and the tabernae behind them.[27] It has been suggested that the monument of Vespasian at Side may have also been dismantled, transported

[26] M. Collignon, "Les fouilles d'Aphrodisias," in *La Revue de l'Art ancien et moderne* 19 (1906), fig. 2; R.R.R. Smith, "Archaeological research at Aphrodisias, 1989–1992," in Charlotte Roueché, R.R.R. Smith, eds., *Aphrodisias Papers 3. The Setting and Quarries, Mythological and Other Sculptural Decoration, Architectural Development, Portico of Tiberius, and Tetrapylon* (Ann Arbor, 1996), 23–27; Ratté "Urban Development of Aphrodisias," 117–47.

[27] Smith, "Archaeological Research," 26, fig. 20.

Fig. 10: The monument of Vespasian at Side (Photo: Authors).

and reconstructed in an oblique corner to the main street (Fig. 10).[28] In its new location at the end of the vista of the thoroughfare, it was turned into a small decorative fountain by adding a large T-shaped drawing basin lined in front by a smaller, narrower one.

In most cities, one or at most two of such conversions are attested. Conversely, at Ephesus, specifically in the lower city, at least five small-scale conversions occurred along with that of the Celsus library (Fig. 2). The hexagon, one of the smaller honorific monuments at the lower end of the Embolos, was almost completely reconstructed in Late Antiquity. Once again, the new structure was very simple in its design, with reused reliefs taken from the Parthian monument serving as a back wall and a balustrade at the front.[29] Some 15m more to the west, small basins were installed underneath the lateral

[28] Mansel, *Side*, 74–76; Arif M. Mansel, "Das Vespasiansmonument in Side," *Belleten* 28 (1964), 203.

[29] Thür, "Kuretenstrasse," 118–19.

passageways of the gate of Hadrian at the same time that the so-called heroön in between the Octagon and the gate received a new parapet.[30] In addition, water basins were attached to the west gate of the Tetragonos Agora[31] and the exedra in front of the harbor baths was given a water supply and parapets.[32] Finally, early reports on the Hadrianic middle harbor gate, located at the eastern end of the Arkadiane, mentioned that water basins were introduced in front of the gate at an unknown time. The pavement of the street then apparently already equaled the height of the base of the gate. Moreover, the water basins were said to be of the kind "that was also employed at the atrium of the harbor baths."[33] Indeed, around 350 , a sumptuously decorated and colonnaded forecourt was added to the harbor baths of Ephesus. The entrance stairway to the bath complex in the north was flanked by two water basins, each consisting of five reliefs with boukranion garlands from the Parthian monument (Fig. 11).[34] Reliefs belonging to the Parthian monument were thus distributed over multiple fountains within the city center of Ephesus, at the latest from the mid-fourth century onwards.[35] Although it is possible that the

[30] For the gate of Hadrian, see Hilke Thür, *Das Hadrianstor in Ephesos* (Vienna, 1989), 25–26, 29, 121–31; heroön: Hilke Thür, "Der ephesische Ktistes Androklos und (s)ein Heroön am Embolos," *JÖAI* 64 (1995), 82–100; Eadem, "The Processional Way in Ephesos as a Place of Cult and Burial," in H. Koester, ed., *Ephesos: Metropolis of Asia; An Interdisciplinary Approach to its Archaeology, Religion, and Culture* (Cambridge, MA, 1995), 159–71, 184–88; Eugenio Russo, "La scultura a Efeso in età paleocristiana e bizantina," in Pillinger et al., *Efeso*, 34–35; Sabine Ladstätter, Andreas Pülz, "Ephesus in the Late Roman and Early Byzantine Period: Changes in Its Urban Character from the Third to the Seventh Century AD," in Andrew Poulter, ed., *The Transition to Late Antiquity. On the Danube and Beyond* (Oxford, 2007), 391–433, at 399; Thür, "Kuretenstrasse"; Alice Waldner, "Heroön und Oktogon. Zur Datierung zweier Ehrenbauten am unteren Embolos von Ephesos," in Sabine Ladstätter, ed., *Neue Forschungen zur Kuretenstraße von Ephesos. Akten des Symposiums für Hilke Thür vom 13. Dezember 2006 an der Österreichischen Akademie der Wissenschaften* (Vienna, 2009), 283–315.

[31] Wilhelm Wilberg, Josef Keil, *Die Agora* (Vienna, 1923), 31–33; Thür, *Hadrianstor*, 127; Dorl-Klingenschmid, *Prunkbrunnen*, 181, cat. no. 18.

[32] Rudolf Heberdey, "V. Vorläufiger Bericht über die Ausgrabungen in Ephesus," *JÖAI 5* (1902), Beibl. 61; Thür, *Hadrianstor*, 129.

[33] Heberdey, "V. Vorläufiger Bericht," 61–62.

[34] The atrium was constructed and decorated by the proconsul L. Caelius Montius, around 350, by order of Constantius II (*CIL* III 14195). Clive Foss, *Ephesus after Antiquity: A Late Antique, Byzantine and Turkish City* (Cambridge, 1979), 59–60; Peter Scherrer, *Ephesus: The New Guide* (Istanbul, 2000), 174.

[35] For an overview of the reliefs depicting important events in the life of the emperor Lucius Verus, see Wolfgang Oberleitner, "Das Parthendenkmal von Ephesos. Festvortrag im Kunsthistorischen Museum, Wien—Ephesos-Museum am 16. November 1995," in Herwig Friesinger, Fritz Krinzinger, eds., *100 Jahre österreichische Forschungen in Ephesos. Akten des Symposions Wien 1995*, (Vienna, 1999), 623–24. In addition to those mentioned here, two reliefs are said to have been found in the surroundings of the so-called *Straßenbrunnen* to the east of the city center: Josef Keil, "XII. Vorläufiger bericht über die Ausgrabungen in Ephesos," *JÖAI* 23 (1926), Beibl. 272–73. Finally, the pavement of the courtyard of the harbor baths also incorporated fragments of the reliefs: Oberleitner, "Parthendenkmal," 619.

Fig. 11: Reliefs belonging to the Parthian monument reused as basins in the entrance court of the harbor baths at Ephesus (Photo: Authors).

reliefs stayed in a marble stockpile for several centuries after the Parthian monument had been dismantled, it is more likely that their reuse, and thus also the conversions of the monuments mentioned, followed relatively quickly during the late fourth or early fifth century.

Finally, multiple small-scale conversions are also attested at Constantinople. Within the city's hippodrome alone, at least three and probably four small fountains were created. First, the Theodosian base placed underneath the Egyptian obelisk was turned into a small fountain, of which only the vertical channel in between the reliefs now remains (Fig. 12). Second, the base of the built obelisk must have functioned as fountain from the moment of its construction onwards. Third, the serpent column was converted into a fountain with water running out of the three serpent heads at an unknown time. Lastly, a fourth fountain probably existed, but its shape remains unknown.[36]

[36] Bauer, *Stadt, Platz und Denkmal*, 250, 252–54, 332; Jonathan Bardill, "The Architecture and Archaeology of the Hippodrome in Constantinople," in *Hippodrom/Atmeydanı: A Stage for Istanbul's History* (Istanbul, 2010), 154–55.

Fig. 12: The base of the Theodosian obelisk at Constantinople (Photo: Authors).

In all probability, these newly converted fountains played a very important part in the adornment of the city. First, the fact that even in the capital of the empire four such structures appear next to one another suggests that lack of adequate funding was not the sole reason for creating fountains out of older monuments. Second, it is also unlikely that they were created purely because large quantities of water were required. Indeed, it is remarkable that two of the larger converted fountains mentioned above were not very user-friendly. At the Celsus library at Ephesus, the reliefs limiting the basin were between 2.04 and 2.08m high, making it impossible to reach the water. Water could be drawn only from small basins installed in between the western passage of the south gate of the Tetragonos Agora and in the center of the parapet. The agora gate nymphaeum at Aphrodisias was intended solely as a decorative monument and did not serve a utilitarian purpose: the decorated slabs reused as parapets were indeed too high to allow the drawing of water and the large pool was not equipped with smaller drawing basins.

Finally, all cited monuments are found in highly visible locations, situated at the end of a major vista, such as the Celsus library at Ephesus, the fountain near "Gaudin's gymnasium" at Aphrodisias and the monument

of Vespasian at Side; at the end of a central civic square, such as the agora gate nymphaeum at Aphrodisias; along one of the city's main streets, such as the nymphaeum at Skythopolis or the converted hexagon at Ephesus; or in the case of the hippodrome at Constantinople, inside the most visited monument in the city. Both new fountains and monuments converted into fountains were therefore located at high-profile locations similar to those preferred in imperial times.[37] Considering that pre-existing fountains were principally preserved and that their total collection was extended by new examples, the number of scenic water-related decorations greatly increased in Late Antiquity.

Fountain-Houses

In spite of the increased frequency of fountains, a more pragmatic approach to water was also applied at more or less the same time. Along with the continuation of highly visible, open fountains, enclosed fountain-houses experienced a revival in Late Antiquity. Compared to their pre-Roman predecessors, they often were extremely plain on the outside and elaborately decorated on the inside. The late fourth- / early fifth-century fountain near the stadium of Ephesus actually belongs to both traditions (Fig. 2). The back wall combined rectangular and semicircular niches, but whereas in earlier days it would have been located along a street or plaza, it was now part of a larger, closed complex that also included a marble-paved courtyard and side rooms.[38] The complex could be entered from the street by a small staircase leading to a long entrance portico, serving as a transition between the outer world and the fountain building.

Likewise, other fountain-houses were somewhat removed from traffic axes and were located at the back of small plazas. The water basins belonging to fountain gg at Side were thus installed at the end of a marble-paved courtyard.[39] This was physically disconnected from the city's main street in two ways. First, by columns that most likely carried a roof construction protecting the complex, and second, by the fact that the floor was located ca.1.5m below street level. Similarly, the Byzantine fountain at Sagalassos was a relatively small vaulted structure located just behind the city's northwest gate, at the

[37] John Bryan Ward-Perkins, *Roman Imperial Architecture* (London, 1981), 299; Dorl-Klingenschmid, *Prunkbrunnen*, 125; Richard, *Nymphaea of the Greek East*, 255–99; Jacobs, *Aesthetic Maintenance*, 226–37.

[38] Werner Jobst, "Ein spätantiker Strassenbrunnen in Ephesos," in Otto Feld, Urs Von Peschlow, eds., *Studien zur Spätantiken und Byzantinischen Kunst, Friedrich Wilhelm Deichmann Gewidmet* (Bonn, 1986), 47–62; Dorl-Klingenschmid, *Prunkbrunnen*, 190–91, cat. no. 28.

[39] Mansel, *Side*, 168; Foss, "Cities of Pamphylia," article no. 4, 33 n.151; Orhan Atvur, *Side. A Guide to the Ancient City and the Museum* (Istanbul, 1997), 42.

Fig. 13: The entrance to the Byzantine fountain house at Sagalassos tucked away behind the north-west heroön. (Photo: © Sagalassos Archaeological Research Project).

end of a small plaza (Figs. 1, 13).[40] One had to enter a small arched opening to arrive at the water source. This led to a semicircular basin lined with onyx revetments. The north and east wall of this central room were veneered in Docimian pavonazzetto marble crowned by a molding, whereas the south wall was plastered. The luxury of the interior contrasted strongly with the structure's unobtrusive exterior.[41] Finally, even the little fountain installed in the corridor between the basilica of St. John at Ephesus and its baptistery was somewhat reminiscent of a long-lived tradition of niche fountains, especially with its sheltered water basin (Fig. 14).[42] Unsurprisingly, the water basins in all of these more closed complexes were very small. The largest, that near the stadium of Ephesus, was a mere 6.02m long.

[40] Marc Waelkens, L. Vandeput, Ch. Berns, B. Arikan, J. Poblome, E. Torun, "The Northwest Heroön at Sagalassos," in Marc Waelkens, Lieven Loots, eds., *Sagalassos V: Report on the Survey and Excavation Campaigns of 1996 and 1997* (Leuven, 2000), 567–68.

[41] Gabi Mazor, "The Bet Shean Project—1988: Department of Antiquities Expedition," *ESI* 7–8 (1988/89), 31; Rachel Bar-Nathan and Gabi Mazor, "The Bet She'an Excavation Project (1989–1991): City center (South) and Tel Iztabba Area; Excavation of the Antiquities Authority Expedition," *ESI* 11 (1993), 35–36.

[42] Josef Keil, *Die Johanneskirche* (Vienna, 1951), 56–58; Friedrich W. Deichmann, "Zur spätantiken Bauplastik von Ephesos," in *Mansel'e armağan. Mélanges Mansel* (Ankara, 1974), 569; Russo, "Scultura a Efeso," 30–32; Dorl-Klingenschmid, *Prunkbrunnen*, 63. For the fountain, ibid., 192, cat. no. 31.

Fig. 14: The small fountain within the complex of St. John's at Ephesus (Photo: Authors).

Street Fountains

A few other water structures constructed in Late Antiquity cannot be categorized as either traditional tabernacle fountains or as fountain-houses. Although the appearance of what we shall call "street fountains" varied greatly, they were invariably small in size and bore little or no decoration. For instance, in front of the theatre at Ephesus a simple rectangular container was installed (Figs. 2, 15). It possessed no further architectural decoration and certainly no aediculated facade, although some friezes with depictions of Tritons and sea animals were found nearby.[43] Likewise, the so-called round fountain at Side only consisted of a circular basin covered by a half dome (Fig. 16), whereas

[43] Peter Schneider, "Bauphasen der Arkadiane," in Friesinger, et al., *100 Jahre*, 477; see also below.

Fig. 15: The remains of the theatre fountain at Ephesus (Photo: Authors).

some niches just to its north were merely holes in the wall covered by barrel vaults sheltering quadrangular basins.[44]

Typically, these smaller, mostly unobtrusive structures have rarely been the topic of research and details on their exact appearance, water provisioning and chronology remain rare. Only a few have been studied in more detail. In the north colonnade of the marble road at Sardis, a small street fountain post-dated the last construction phase of the street in the late fourth century.[45] Again, it was a very simple structure consisting of a basin, which was later divided into two sections, built over a stretch of the colonnade. The sides of the basin were lined with hydraulic cement. Next to the basin, two marble slabs were laid over the road surface. On their top surfaces, there were marks of a circular setting, probably for a fountain. This was confirmed by

[44] For the round fountain, see Mansel, *Side*, 69–70; Dorl-Klingenschmid, *Prunkbrunnen*, 246, cat. no. 108. For the niches, see Foss, "Cities of Pamphylia," article no. 4, 36; Dorl-Klingenschmid, *Prunkbrunnen*, 256, cat. no. 143.

[45] Fikret K. Yegül, *Baths and Bathing in Classical Antiquity* (New York, 1986), 20.

Fig. 16: The remains of the so-called round fountain at Side (Photo: Authors).

the discovery of feeding pipes and a tiled drain situated along the entire length of the north side of the colonnade.[46]

At Sagalassos, the installation of small street fountains seems to characterize the sixth century. In the upper part of the city, in front of the Byzantine fountain just mentioned, a tiny apsidal tuff basin, barely 1.30 by 1.18m large and 0.56m high, was installed.[47] Also, in the lower city, along the west side of the main north-south colonnaded street, a modest street fountain has been uncovered.[48] It consisted of a gap of 0.99m wide in the bordering wall of the street, covered by one large ashlar, accompanied by a 2.10m long, 0.48m wide, and 0.76m high basin in front (Figs. 1, 17). In this particular case it could be established that the installation of the street fountain was very late in

[46] Ibid.

[47] Waelkens et al., "Northwest Heroön," 568.

[48] Ine Jacobs, Marc Waelkens, "A First and Sixth Century Colonnaded Street at Sagalassos," forthcoming, *Istanbuler Mitteilungen*.

Fig. 17: The street fountain along the main colonnaded street of Sagalassos (Photo: Authors).

date. The late dating was already implicitly suggested by the makeshift nature of the structure: its cover was merely a block that had once been part of the upper course of the bordering wall to the south of the street fountain. Indeed, its top course as well as the colonnade that had once stood on top had been dismantled over a distance of almost 4m. Moreover, a small gap in between the basin and the bordering wall of the street was closed by white, not water-tight, mortar. In addition, the lower part of the basin was supported by small rubble stones on the outside. Therefore, it seems likely that the heavy basin was never successfully, or at least properly, pushed against the wall. Finally, ceramics retrieved from a sounding in the fill on which the fountain had been installed confirmed that it belonged to the first half of the sixth century.

With this overview, it becomes increasingly clear that preexisting classifications of fountain architecture are no longer adequate for Late Antiquity. In addition to new or converted straight facade fountains, completely new structures could take on almost any form. Virtually any decorative monument could be turned into an attractive water supply, meaning even simple rows of

columns were deemed suitable as decorative background for a water display. The most important prerequisites were the presence of an attractive facade and a key point location along or at the end of a major traffic axis. When circumstances allowed, one did not hesitate to transport an attractive facade to such a position.

Even though the multiplication of decorative water structures in Late Antiquity testifies to a continuous appreciation for the aesthetic qualities of water, the majority of these late antique fountains were much smaller and simpler than their imperial predecessors. In the case of both completely new nymphaea and in that of conversions, one aimed at achieving maximal effect with minimal investment of time, energy, and money. Especially with conversions, the interventions were limited. They consisted mostly of the construction of a rectangular basin and, optionally, its decoration with either older reliefs taken from elsewhere in the city or with rather plain, newly carved slabs. With the exception of the agora gate at Aphrodisias and the Celsus library at Ephesus, most nymphaea possessed only small basins, shorter than 20m and sometimes even less than 10m.

One should bear in mind, moreover, that the study of fountain architecture in imperial times has been quasi-limited to nymphaea, at least as far as the eastern Mediterranean is concerned. A general study of street fountains in the Roman east has yet to be accomplished and a significant part of the material evidence remains unpublished and hence unknown. Therefore, the small street fountains, enclosed fountain-houses, and nymphaea characterizing many late antique urban centers might well be late successors to much older architectural archetypes.

Fountains and Benefactors

Placed against broader developments in funding mechanisms of Late Antiquity, the modest scale of these investments is hardly surprising. In the first three centuries of the Roman Empire, funding for fountains was derived mainly from private benefactions and the municipal government. Members of the affluent urban elite sought to confirm their prominence in their hometown by competing for prestigious posts in the municipal government. The preeminent means of acquiring such posts was through benefactions. These included both the construction of public buildings and the provision of urban amenities, such as the organization of games and banquets, and the distribution of food or other goods.[49] Although the latter guaranteed immediate popularity, public

[49] Arnold H.M. Jones, *The Late Roman Empire 284–602: A Social, Economic, and Administrative Survey* (Baltimore, 1964), 247–50; Sartre, *Orient romain*, 147–66; Helmut Halfmann, *Städtebau und Bauherren im römischen Kleinasien. Ein Vergleich zwischen Pergamon und Ephesos*

buildings were favored, as they would remain present in the urban landscape for generations to come. Among these, nymphaea represented a popular and somewhat cost-effective investment for private benefactors. The profusion of colored marble and statues made them expensive enough to stand as symbols of wealth and status, yet their size and design made them more affordable than aqueducts or baths. Compared to the latter, nymphaea were generally financed in their totality by a single person. The typical benefactor behind the construction of a monumental fountain was a person of high status. Holders of civic and provincial priesthoods are the most-represented positions in the epigraphic record of the first three centuries, followed by urban magistrates. The statuary decoration was frequently mentioned explicitly in the building inscription, as its higher cost increased the prestige of the benefactor. Exceptionally, the gift included a section or even the totality of the aqueduct supplying the monument. It is also essential to bear in mind that the apparently higher representation of private benefactors in the sources may hide substantial financial involvement of cities, whose building activity was less systematically advertised by means of inscriptions.[50] Cities indeed retained the final decisional power as far as water provisioning was concerned.[51] Considering that long-distance aqueducts and fountains were comprehensive and technically challenging projects, supervision by civic authorities is hardly surprising.

The strong presence of private individuals in the epigraphic record of the first three centuries of the Roman Empire strongly contrasts with the findings of later centuries. One of the last private benefactors to be commemorated epigraphically for his contribution to the nymphaeum of the main gate and aqueducts of Side was Bryonianus Lollianus in the age of Diocletian.[52] The few initiators of fountain construction and conversion celebrated in the centuries of Late Antiquity were proconsuls and governors in the first place, and

(Tübingen, 2001); Julian Richard, "In the Elites' Toolkit: Decoding the Initiative and Reference System behind the Investment in the Architecture and Decoration of Roman Nymphaea," *FACTA: A Journal of Roman Material Culture Studies 5* (2011), 65–100.

[50] Werner Eck, "Der Euergetismus im Funktiozusammenhang der kaiserzeitlichen Stätde," in Michel Christol, Olivier Masson, eds., *Actes du Xe Congrès International d'Épigraphie grecque et latine. Nîmes, 4–9 Octobre 1992* (Paris, 1997), 315–24. On the funding of water infrastructure in general, see Werner Eck, "Die Wasserversorgung im römischen Reich: Sozio-politische Bedingungen, Recht und Administration," in Günther Gabrecht, ed., *Die Wasserversorgung Antiker Städte. Pergamon. Recht/Verwaltung. Brunnen/Nymphäen. Bauelemente* (Mainz, 1987), 51–101.

[51] Eck, "Wasserversorgung," 68–70; Idem, "Magistrate, Ingenieure, Handwerker: Wasserleitungsbauer und ihr Sozialstatus in der römischen Welt," in *Wasserbau in der Geschichte. Kolloquium zu Ehren von Prof. Dr.-Ing. Dr. sc. h.c. Günther Garbrecht* (Braunschweig, 1987), 134–35; Engelbert Winter, *Staatliche Baupolitik and Baufürsorge in den römischen Provinzen des kaiserzeitlichen Kleinasien* (Bonn, 1996), 159–60.

[52] Nollé, *Side*, 406–07 n.106; IGR, III, 1906; Karol G. Lanckoroński, *Städte Pamphylien und Pisidien*, 2. *Pisidien* (Vienna, 1892), n.107.

later, over the course of the fifth century, civic magistrates such as the *pater tēs poleos*. Thus proconsul L. Caelius Montius restored the Fontäne at Ephesus during the reign of Constantius.[53] Half a century later, proconsul Stephanos commissioned the restoration and conversion of the Celsus library into a fountain.[54] Also in the early fifth century, Flavius Artemidoros, governor of Palestina Secunda, had the nymphaeum at Skythopolis re-erected.[55] When the agora gate at Aphrodisias was turned into a monumental fountain, both a governor, Dulcitius, and a *pater tēs poleos*, Flavius Ampelius, were commemorated as its instigators.[56]

This shift from commemoration of private individuals to mentioning of magistrates, and also from the lavish nymphaea of the imperial age to the more modest fountains of Late Antiquity, was a consequence of broader social and political evolutions within that period. Although this is not the place to elaborate upon this much-debated subject, a short summary is useful for understanding the condition of waning funds for public architecture in general, and for fountains in particular.

The reforms initiated by Diocletian and Constantine in the beginning of the fourth century had a severe influence on the traditional system of government and funding. The role of councilors had lost much of its former attraction.[57] It had become more controlled, more demanding, and more frustrating, causing participation in local government to become less popular. Individual members of the local elite no longer donated in order to be accepted as a member of the council.[58] For the city council itself, it had become far more difficult to fund projects of the traditional kind. Not only were the wealthiest members busy seeking their fortune elsewhere,[59] but civic property and civic taxes had also been systematically confiscated by the imperial *res privata* under the reigns

[53] *IvE* 4.1316–17 = Peter Scherrer, "Die Fernwasserversorgung von Ephesos in der römischen Kaiserzeit," in Wiplinger, *Cura Aquarum*, 45–58, here 51–53, no. 5 l-m.

[54] *FiE* 5/1 79, no. 15 = *IvE* 7.2.5115.

[55] Foerster, Tsafrir, "Beth Shean Project," 27–28; Leah Di Segni, "The Involvement of Local, Municipal and Provincial Authorities in Urban Building in Late Antique Palestine and Arabia," in John H. Humphrey, ed., *The Roman and Byzantine Near East 1* (Ann Arbor, 1995), 318.

[56] Roueché, *Ala2004*, 39, 40 and 38.

[57] Jones, *Late Roman Empire*, 749.

[58] On the decline of the curial order, see Fergus Millar, "Empire and City: Augustus to Julian: Obligations, Excuses and Statues," *JRS* 73 (1983), 79–96; Avshalom Laniado, *Recherches sur les notables municipaux dans l'empire protobyzantin* (Paris, 2002), esp. ch. 1.

[59] Jones, *Late Roman Empire*, 737–57; Arnold H.M. Jones, *The Decline of the Ancient World* (London/New York, 1966), 152–53, 244; Mark Whittow, "Ruling the Late Roman and Early Byzantine City: A Continuous History," *Past and Present* 129 (1990), 9; John H.W.G. Liebeschuetz, "The End of the Ancient City," in John Rich, ed., *The City in Late Antiquity* (London/New York, 1992), 7–8.

of Constantine and Constantius.[60] Even though some part of these funds was returned to the cities in 374,[61] the municipal budget was by then considerably smaller than it had been in the past. It had become difficult to sponsor new construction and moreso to maintain existing architecture and infrastructure.

In the newer, smaller provinces, the city councils fell under the direct control of the provincial governor. Governors had become responsible for the management of major public works in all municipalities of their province, meaning that they decided what work was to be undertaken and how much would be spent on it, and they would also take credit for their role in inscriptions.[62] Over the course of the fifth century, the predominance of the governors' names in inscriptions crumbled under the influence of new prominent citizens, the most important being the *pater tēs poleos* and the *prōteuontēs,* leading members of the urban elites. The *pater* originally appears in inscriptions as a agent or supervisor of the governor following up on the execution of construction and renovation projects.[63] By the mid-fifth century the *pater* had become an important municipal officer, appointed from among the leading members of the council.[64]

It should be stressed that neither the governor, nor the *pateres,* nor other prominent members appearing in building inscriptions of Late Antiquity actually paid for the works from their own private purse. Instead, they were the ones entrusted with the supervision of works that remained financed by the reduced municipal funds.[65] Finally, it can also be assumed that the church and its local bishops, who were distinguished members of the city council by Late Antiquity, had a hand in fountain architecture and the water supply of the late antique city. Although archaeological evidence is scarce, the involvement of bishops in provisioning other daily necessities to their congregation has been widely attested. At Gortyn in Crete, for example, epigraphic evidence confirms that religious authorities were involved in the renovation of the water system in the late sixth or early seventh century.[66]

[60] Jones, *Late Roman Empire*, 732.

[61] *CTh* 4.13.7 (374) regulated the refund; *CTh* 15.1.32 (395); 33 (395) ordered that these funds should be spent on public works. Jones, *Late Roman Empire*, 732–33.

[62] Louis Robert, *Épigrammes du Bas-Empire* (Paris, 1948), 35–82, esp. 60–82; Jones, *Late Roman Empire*, 374; Daniëlle Slootjes, *The Governor and his Subjects in the Later Roman Empire* (Leiden/Boston, 2006), 77–89.

[63] Jones, *Late Roman Empire*, 758; Claude Lepelley, *Les cités de l'Afrique au Bas Empire*, 1 (Paris, 1979), 185–93, esp. 191; Di Segni, "Municipal and Provincial Authorities," 325.

[64] Charlotte Roueché, "A New Inscription from Aphrodisias and the Title *pater tēs poleos*," *GRBS* 20 (1979), 173–85.

[65] Paul Petit, *Libanius et la vie municipale à Antioche au IVe siècle après J.C.* (Paris, 1955), 318–20.

[66] Elisabetta Giorgi, "Water Technology at Gortyn in the 4th-7th c. AD: Transport, Storage and Distribution," in Luke Lavan, Enrico Zanini, Alexander Sarantis, eds., *Technology in Transition AD 300–650* (Leiden, 2007), 287–320, here 313.

Although the construction of fountains in Late Antiquity was invariably executed with a sense of monumentality, it is not surprising to conclude that their size and elaboration represented only a modest repetition of the grand nymphaea of the imperial age. In addition, conversions of existing monuments, which, as explained, were low-cost but highly effective means to further adorn the city, may also have been implemented because of the increasing saturation of the city fabric. Indeed, though in many regions the sometimes excessive constructions of the imperial age were brought to a halt by the crisis of the third century, in the Levant and in Asia Minor this crisis had little influence. Nonetheless, building was halted by this time because the cities already contained all the public buildings and amenities that they needed and there was little or no free space left to build on.[67]

Decoration of Newly Built Fountains

Architectural Decoration

Despite the elevated number of late antique fountains, these were seldom in need of new architectural decoration. Fountains that had been created by adding basins to an existing facade made use of the existing architecture. Other late antique fountains consisted of little more than a basin with a simple back wall, or they took the shape of closed fountain-houses. Only a few new fountains, those built in the straight façade tradition, made use of freshly carved architectural fragments. The building elements of the aediculated nymphaeum at Side were probably produced only in the late third century. For the late fourth, early fifth-century stadium fountain at Ephesus, only the Ionic impost capitals of the columns in the courtyard were new additions,[68] whereas all other building elements originated from older buildings in the city. The Corinthian capitals at fountain gg at Side have been dated to the fifth or sixth century,[69] but the remaining building elements may have been reused. Finally, the tabernacle architecture of the Justinianic fountain hh at Side and that at Antioch-on-the-Orontes may very well have been newly carved, but not well preserved.[70]

[67] Stephen Mitchell, "Greek Epigraphy and Social Change: A Study of the Romanization of South-West Asia Minor in the Third Century AD," in *Congresso Internazionale di epigrafia greca e Latina. Roma 18–24 settembre 1997* (1999), 419–33.

[68] Jobst, "Strassenbrunnen," esp. 55.

[69] Mansel, *Side*, 168; Foss, "Cities of Pamphylia," article no. 4, 33 n.151; Atvur, *Side*, 42.

[70] Mansel, "Bericht," 41–42; Idem, *Side*, 172; Foss, "Cities of Pamphylia," article no. 4, 39; Dorl-Klingenschmid, *Prunkbrunnen*, 246, cat. no. 109; Lassus, *Les Portiques d'Antioche*, 46.

Statues and Reliefs

The lavish facades of Roman nymphaea were invariably enhanced by an extravagant statuary display. These included representations of deities and heroes, aquatic and curative figures, mythological scenes, and honorific statues of emperors or local benefactors spread over the many niches and *aediculae*.[71] In addition to these freestanding statues, nymphaea also possessed abundant relief decoration, consisting of both isolated symbols and narrative reliefs and friezes. These decorations mostly integrated references to the universe of water, Olympic gods, or Greek-Roman mythology, including the mythological past of the city. Because fountain architecture had undergone substantial changes since the imperial period, its further figurative decoration was also bound to evolve.

One could say that statuary decoration had lost much of its importance. Fountains adapted from existing monuments either inherited a statuary ensemble (for example, the Celsus library at Ephesus), or their architecture was not suited for this (for instance, that of converted porticoes). Likewise, many completely new fountains no longer offered room for statues. Even though it was still traditional in design, nymphaeum F1 in Perge was not intended to have a statuary display. Rectangular water basins such as those along the theatre street at Ephesus or along the western border of the upper agora at Sagalassos were no longer designed with a statuary display in mind; neither were small fountains such as the round fountain and the nearby fountain niches at Side, nor enclosed fountain complexes.

Only the late antique fountains following the Roman tabernacle tradition still possessed an architectural frame fit for the display of statues. Thus, the Justinianic nymphaea at Side and Antioch were certainly candidates for late statuary displays, but remains of statues have not been found in either location. At this point in time, if statues had once been present they would have undoubtedly been taken from older monuments in the city. At Side, transfers of statuary were already taking place in the late third century. The ensemble associated with the late third-century aediculated nymphaeum consisted of life-sized items derived from elsewhere in the city. Two of the statues, both of which originally depicted Hermes, were of Antonine date, and a third statue of Athena was Severan. Upon their re-erection in the nymphaeum, the presence of two depictions of the same god was avoided by re-cutting one of the

[71] Balázs Kapossy, *Brunnenfiguren der Hellenistischen und Römischen Zeit* (Zürich, 1969), 12–53; Franz Glaser, "Fountains and Nymphaea," 447; Dorl-Klingenschmid, *Prunkbrunnen*, 93–101; Richard, "Elites."

Hermes statues into an Apollo.[72] Combined with the eventual display of the two main gods of the city, Athena and Apollo, accompanied by Hermes, god of trade, the flourishing harbor city of Side no doubt intended to express both prestige and civic pride.

Statuary production had already drastically declined by the beginning of Late Antiquity. The main production in the fourth and fifth centuries consisted of small-scaled statuettes, which were initially distributed to private mansions all over the Mediterranean but which occasionally found their way into public monuments. For instance, the façade of the stadium fountain at Ephesus was ornamented with at least three late fourth-century statuettes depicting Dionysus and a satyr, a sleeping Eros, and Harpocrates with a crocodile and theater mask through which water flowed.[73] Since the parapets of the basin were decorated with various crosses,[74] the exposition of the statuettes is not likely to have been intended as a religious statement. Rather, they were considered as an expression of general cultural heritage.[75] The statues of the Good Shepherd and a scene depicting Daniel in the lions' den, which Eusebius claimed had adorned the nymphaeum on the forum of Constantine, were probably also not life-sized.[76] Indeed, such small-scale statues of Christian subjects have occasionally been found, mainly in and around the capital.[77] Compared to pagan-mythological statues, however, their number is small.

In comparison to freestanding statuary, new relief decoration was still added quite often to both entirely new as well as converted monuments. In contrast to previous centuries, however, the focus shifted from the back wall of the fountain to the parapets. Examples of reliefs on the facade of the buildings were limited to the poorly preserved basin near the theatre at Ephesus (Fig. 2), which was said to have possessed some full-fledged friezes with depictions of Tritons and sea animals created during Late Antiquity,[78] and the lower part of the cornice at the stadium fountain, which carried a geometrical ornamentation in low relief.

[72] Jale İnan, *Roman Sculpture in Side* (Ankara, 1975), no. 6, 9, 72 and 83.

[73] Jobst, "Strassenbrunnen," 57–60; Maria Aurenhammer, *Die Skulpturen von Ephesos: Idealplastik I* (Vienna, 1990), 66–67, 93–95, 101–02.

[74] See below.

[75] Ine Jacobs, "From Production to Destruction? Pagan Statuary in Late Antique Asia Minor," *AJA* 114 (2010), 271.

[76] Eusebius, *VConst*. 3.49.

[77] Nezih Fıratlı, *La sculpture byzantine figurée au Musée Archéologique d'Istanbul*, catalogue revised by Christof Metzger, tr. A. Arel (Paris, 1990), 21–25, no. 42–47 = Istanbul Archaeological Museum inv. no. 908 (Işıklar, near Bursa); 4992 (Istanbul); 910 (Aydın); 2674 (Eskişehir); 4404 (İzmir) in the fourth century; 4960 (Eskişehir) dated to the fifth century.

[78] Schneider, "Arkadiane," 477.

Fig. 18: The parapet of nymphaeum hh at Side (Photo: Authors).

Decoration of parapets in the Roman centuries had been rare,[79] and in Late Antiquity, many parapets also remained simple orthostats, sometimes with an upper and lower molded profile. The main reason for this apparently was because the decoration was perceived as inconvenient for taking water. Reliefs would indeed increase the thickness of parapet plates and they ran the risk of being damaged by water vessels. The earliest example of decoration on a fountain parapet may be the so-called Fountain of Caracalla at Laodicea,[80] where the pillars in between the parapets carried reliefs so they could be physically avoided when taking water. The stadium fountain, the heroön, and the gate of Hadrian at Ephesus, as well as the nymphaeum hh at Side were given newly carved reliefs as parapets, in the late fourth or early fifth century, the mid-sixth century, and the Justinianic period, respectively.[81]

The motifs were similar in all cases, but their further elaboration differed. The parapet created at Side had the quality of being three-dimensional, with secondary drawing basins shaped as craters between Corinthian half columns and, in between, flat panels depicting either craters surrounded by grapevines or crosses above a garland (Fig. 18). The drawing basins were too small to plunge large water vessels into and although they could still be used for drinking on the spot, their addition to the large basin can primarily be considered a decorative element. Although secondary drawing basins had also occurred in

[79] Dorl-Klingenschmid, *Prunkbrunnen*, 104–08. Jacobs, *Aesthetic Maintenance*, 257 n.214.

[80] Dorl-Klingenschmid, *Prunkbrunnen*, 107.

[81] For the stadium fountain, see Jobst, "Strassenbrunnen," 51–57; the heroön, Thür, "Kuretenstrasse," 117; fountain hh, Dorl-Klingenschmid, *Prunkbrunnen*, 246, cat. no. 109.

Fig. 19: The remains of the heroön at Ephesus (Photo: Authors).

earlier centuries, for instance at the Fountain of Caracalla at Laodicea,[82] the decorative importance of the craters had increased. The parapets at Ephesus were more geometric and they were simpler overall, often carved in a shallow relief (Fig. 19). The slabs of the stadium fountain were decorated with a Christian cross inside a circular medallion, whereas a cantharus with projecting vegetal motifs was carved on the central plate. The slabs of the heroön and the gate of Hadrian carried crosses, or lozenges, or combinations of both, separated by small pillars that also included stylized decoration. It is worth mentioning that these reliefs were carved into reused slabs, which, in the case of the heroön, explains the evidence of wear and the existence of lifting-holes in the interior sides of the blocks.

Similarly, reused relief decoration remained limited to parapets. Such decoration is well known from Ephesus and Aphrodisias. In both cities, figural decoration of older, dismantled monuments was redistributed over building operations within the town. At Ephesus, the temple of the Sebastoi provided the relief plates composing the parapet of the fountain in the theatre street. As mentioned above, the reliefs of the Parthian monument were distributed over multiple fountains, including the Celsus library. At Aphrodisias, both

[82] See below.

the agora gate and the fountain near "Gaudin's gymnasium" obtained slabs from perhaps more than one monument and depicted scenes from an amazonomachy, centauromachy, and gigantomachy (Fig. 9).[83] The original relief sequence was not respected at the agora gate of Aphrodisias, nor at the Celsus library of Ephesus. In their new location, the reliefs were placed next to each other without any obvious iconographic relation.[84]

There are three possible explanations, though they do not mutually exclude each other. It could be that it was no longer possible to replicate the original order, because some of the reliefs had been damaged in one way or another. Knowledge of how to assemble them in their intended sequence may have been lacking, as the original context was no longer understood. Or the reliefs may simply have been used in a purely ornamental fashion.[85] The second option seems highly unlikely for both Aphrodisias and Ephesus, as other civic projects executed in these two cities testify to a high level of professionalism. At Ephesus, the fact that some of the reliefs belonging to the Parthian monument were found in bits and pieces in the courtyard of the harbor baths implies that at least some pieces had indeed been damaged.[86]

When considering the lack of coherence in roughly contemporary geometrical parapets, the correct composition of scenes was apparently no longer of primary importance. For this reason, Franz Alto Bauer proposed that constructors actually selected slabs with depictions that could be reused outside their original context and portrayed frontal characters that could be reinterpreted by passers-by.[87] For Aphrodisias, Pascale Linant de Bellefonds proposed that the scenes possessed a political meaning in their original context and were intended to glorify imperial victories. Also, the parapet of the Celsus library still featured important scenes of imperial propaganda.[88] It is likely that this meaning was still understood by the late fourth- and even the mid- or late fifth-century population. Indeed, it seems that especially from this era onwards, imperial imagery dominated the entire Embolos and marble street.[89] The phenomenon had already started in the tetrarchic period, but especially under the Theodosian dynasty, imperial power was acknowledged

[83] Linant de Bellefonds, "Agora Gate."

[84] In the fountain near "Gaudin's gymnasium" at Aphrodisias, each relief apparently closed off the opening in between the pedestals of the facade and thus stood more or less on its own. The manner of reuse in the east gymnasium at Ephesus is completely unknown, whereas at the so-called nymphaeum along the Embolos only three slabs were retrieved.

[85] Bauer, *Stadt, Platz und Denkmal*, 282; Linant de Bellefonds, "Agora Gate," 186.

[86] Oberleitner, "Parthendenkmal," 619.

[87] Bauer, *Stadt, Platz und Denkmal*, 282.

[88] Linant de Bellefonds, "Agora Gate," 186.

[89] Roueché, "Inscription from Aphrodisias."

and celebrated through the erection of multiple statues of the imperial house and no doubt also by perennial ceremonies.[90]

In most examples mentioned, the inclusion of statuary decoration, whether statuary in the round or relief decoration, was still meaningful. Although most fountains were essentially ornamental, this decoration was still consciously used to express local pride, traditions and religious beliefs, or to celebrate imperial power.

Active Preservation of Older Nymphaea in Late Antiquity

What is Active Preservation?

Even before early Late Antiquity, cities already possessed one or more decorative fountains. These were almost invariably still functioning and were actively preserved in the later centuries. Active preservation of a fountain meant that it had undergone alterations or repairs that ensured its continued functionality and/or its pleasant appearance. Many interventions qualify as active preservation. Some fountains may have been reconstructed partially or even entirely after a dramatic event, such as an earthquake. In other cases, some of the architectural fragments might have been replaced. In some instances, only a new inscription was applied, but there could also be more creative alterations to the architectural and figural decoration. For instance, a fountain could be provided with a new balustrade or could have its statuary ensemble updated. Finally, fountains regularly underwent changes related to the maintenance of their hydraulic apparatus, such as the application of a new mortar coating. The majority of these changes did not alter the fountain's function or appearance. More extensive modifications could, however, cause the fountain to lose its decorative potential, whereas other far-reaching changes could even cause the end of the water provisioning at the fountain location itself. This last issue will be considered separately.

Architectural Changes

The most extreme form of active preservation was the reconstruction of the original monument, which often followed a drastic event such as an earthquake or an enemy raid. Thus, the nymphaeum at the main gate at Side was restored and very likely partially re-erected at the end of the third century, following the Gothic invasions in the time of Gallienus (253–268).[91] As

[90] Ibid., 158–62.

[91] For two sets of written documents pointing to a partial reconstruction of the fountain in 240 CE under Gordian III and to repairs a few decades later, under Diocletian, see Jean-Michel Carrié, "Bryonianus Lollianus de Side ou les avatars de l'ordre équestre," *ZPE* 35 (1979), 213–24; Peter

Fig. 20: A late antique building mistake in the Antonine nymphaeum at Sagalassos (Photo: Authors).

noted, the nymphaeum at Skythopolis was almost completely reconstructed near the end of the fourth century.[92] Finally, at Sagalassos, both the eastern lower podium of the Hadrianic nymphaeum above the city's lower agora and the eastern part of the Antonine nymphaeum on the upper agora were rebuilt at an unknown time, as indicated by several recuttings and construction mistakes (Fig. 20).[93] The Fontäne at Ephesus was restored in the mid fourth century by proconsul L. Caelius Montius.[94] Besides the application of new inscriptions, these interventions may have encompassed the construction of two new large square basins in front of the projecting wings flanking the central construction, or at least the replacement of their balustrade.[95] Damaged or weathered architectural elements may have been replaced in certain

Weiss, "Ein agonistiches Bema und die isopythischen Spiele von Side," *Chiron* 11 (1981), 315–346; Nollé, *Side*, 204, no. TEp4; 398–407, no. 105; Foss, "Cities of Pamphylia," article no. 4, 26. According to Dorl-Klingenschmid, *Prunkbrunnen*, 242–44, cat. no. 106, the two upper storeys of the building may have been added under Gordian III. This assumption, however, cannot be confirmed by terrain observations.

[92] Foerster, Tsafrir, "Beth Shean Project," 27–28.

[93] Semra Mägele, Julian Richard, Marc Waelkens, "A Late-Hadrianic Nymphaeum at Sagalassos (Pisidia, Turkey)," *Istanbuler Mitteilungen* 57 (2007), 469–504; Marc Waelkens, Pierre-Marie Vermeersch, Etienne Paulisson, Edwin J. Owens, Burcu Arikan, Marleen Martens, Peter Talloen, Leen Gijsen, Lieven Loots, Chris Peleman, Jeroen Poblome, Roland Degeest, Teresa C. Patrício, Semih Ercan, Frans Depuydt, "The 1994 and 1995 Excavation Seasons at Sagalassos," in Marc Waelkens, Jeroen Poblome, eds., *Sagalassos IV: Report on the Survey and Excavation Campaigns of 1994 and 1995* (Leuven, 1997), 127–62. For building mistakes: Jacobs, *Aesthetic Maintenance*, 559–61.

[94] *IvE* 4.1316–17 = Scherrer, "Fernwasserversorgung," 51–53, no. 5 l-m.

[95] Fritz Eichler, "Die österreichischen Ausgrabungen in Ephesos im Jahre 1962," *AnzWien* 100 (1963), 46–47; Dorl-Klingenschmid, *Prunkbrunnen*, 182–84, cat. no. 20.

Fig. 21: Bases at the Severan nymphaeum at Sagalassos, including a simplified base (Photo: Authors).

cases. Thus, the column bases of the Severan nymphaeum at Sagalassos were not only diverse in height, but also contained simplified items, some with only a summary indication of their shape (Figs. 1, 21). In the regions under investigation, such simplified elements were recurrent from the fourth century onwards.[96] In the second half of the fourth century, the Nymphaeum Traiani at Ephesus received a new upper balustrade incorporating herms, two with female heads, one depicting a helmeted warrior and the other a bearded philosopher.[97] According to Foss, the monument was not only damaged, but also

[96] Jacobs, *Aesthetic Maintenance*, 447–50.

[97] Franz Miltner, "XXIII. Vorläufiger Bericht über die Ausgrabungen in Ephesos," *JÖAI* 44 (1959), 339–40; Henning Wrede, *Die spätantike Hermengalerie von Welschbillig* (Berlin, 1972), 82–84; Dorl-Klingenschmid, *Prunkbrunnen*, 188–89, cat. no. 26; Ursula Quatember, "The Water Management and Delivery System of the Nymphaeum Traiani at Ephesus," in Gilbert Wiplinger, ed., *Cura Aquarum in Ephesus: Proceedings of the Twelfth International Congress on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Ephesus/Selçuk, Turkey, October 2–10, 2004* (Leuven/Paris/Dudley, MA, 2006), 73–78; Idem, "Neue Zeiten—Alte Sitten? Ti. Claudius Aristion und seine Bauten in Ephesos," in M. Meyer, ed., *Neue Zeiten—*

entirely rebuilt in the later fourth century. This is quite possible, considering the other elaborate renovation works going on in the area.[98]

Decorative Changes

The statuary decoration of traditional nymphaea often underwent changes during the long centuries standing on display. In some cases, one or two statues can be recognized as later supplements to, or replacements of, the original program. Such decorative updates also occurred in earlier centuries. For instance, the statuary display of the Nymphaeum Traiani at Ephesus included a statue of Dionysus dated to the Antonine period. The statuary display of the late Hadrianic nymphaeum at Sagalassos was supplemented by an Aphrodite, also of Antonine date.[99] This practice continued throughout the centuries of Late Antiquity. Thus, a portrait head dated between 270 and 290 was found next to the Hadrianic ensemble of nymphaeum F3 at Perge.[100] At the end of the third or beginning of the fourth century, statues of Diocletian and Maximianus were set up in front of the hydreion near the Memmius-Bau at Ephesus.[101] A few decades later, the original portrait heads of two armored torsos displayed in the city's Fontäne may have been replaced with portraits of Constantius and Constans when the nymphaeum was renovated under their reign.[102] Although this practice was repeated in other locations,[103] the action is difficult to confirm because the heads are now missing. Again at Ephesus, the original statuary ensemble of the Celsus library was updated with at least a statue of proconsul Stephanos, who had been responsible for the restoration of its facade during the end of the fourth or the early fifth century.[104] Finally, as late as the second half of the fifth century, two portrait busts, male and female, were added to the existing statues of the Severan nymphaeum at Stratonikeia.[105]

Neue Sitten. Zu Rezeption und Integration römischen und italischen Kulturguts in Kleinasien (Vienna, 2007), 101–13; Idem, *Das Nymphaeum Traiani in Ephesos* (Vienna, 2011) .

[98] Ladstätter, Pülz, "Ephesus in the Late Roman and Early Byzantine period," 398–405; Ursula Quatember, Veronika Scheibelreiter, Alexander Sokolicek, "The Kuretenstrasse: The Imperial Presence in Late Antiquity," in Sabine Ladstätter, ed., *Neue Forschungen zur Kuretenstraße von Ephesos. Akten des Symposiums für Hilke Thür vom 13. Dezember 2006 an der Österreichischen Akademie der Wissenschaften* (Vienna, 2009), 111–54.

[99] Mägele, Richard, Waelkens, "Late-Hadrianic Nymphaeum," 485–86.

[100] Jale İnan, Elisabeth Alföldi-Rosenbaum, *Römische und frühbyzantinische Porträtplastik aus der Türkei. Neue Funde* (Mainz, 1979), no. 233.

[101] *IvE* 2.308–09.

[102] Rudolf Heberdey, "IX. Vorläufiger Bericht über die Ausgrabungen in Ephesos," *JÖAI* 15 (1912), 177. These two emperors also are mentioned in the restoration inscription (*IvE* 4.1316–17).

[103] Jacobs, *Aesthetic Maintenance*, 418–419.

[104] *FiE* 5/1 79, no. 15 = *IvE* 7.2.5115; Bauer, *Stadt, Platz und Denkmal*, 280–81.

[105] Ramazan Özgan, *Die Skulpturen von Stratonikeia* (Bonn, 1999), no. K50, K51.

On other occasions, older statues were taken from elsewhere in the city and reused in fountains for further decorative purposes. Again, this practice occurred from early periods onwards. Thus, the Domitianic Apsisbrunnen at Ephesus was decorated with a group of statues carved in the first century BCE and later supplemented by a statue of a "dying Gallic warrior" and a "goblet bearer" dated to the early second century BCE.[106] The statuary program of the aediculated nymphaeum at Side was assembled in the same manner, with two statues of Antonine date that had been taken from two different locations, and another of Severan date. Likewise, after the re-erection of the Antonine nymphaeum on the upper agora at Sagalassos, it was redecorated. Of the original ensemble, only the groups of Dionysus and a satyr in the corner *aediculae* remained. The other statues presumably did not survive the event that caused the collapse of the building. A new ensemble was composed of statues taken from elsewhere in the city.[107] Of this second decoration program, eight statues were retrieved in various states of preservation. Besides the two life-size groups of Dionysus and a satyr, there was also a torso of a naked youth, a Nemesis, a statue of Coronis, a lower arm with a snake coiled around it belonging to a statue of Hygeia, an Asclepius and a plinth bearing the feet of a male statue (Fig. 22). Although there is no clear evidence that can date this reconstruction, we have argued elsewhere that the redecoration and repairs took place during the late fourth century or afterward.[108]

These nymphaea, and also the fountain near the stadium at Ephesus, prove that statuary programs including depictions of divinities were not skewed in Christian centuries, despite religious tensions characterizing the entirety of Late Antiquity, and the late fourth and early fifth centuries in particular. Additionally, almost all older fountains retained their existing decoration, regardless of the subjects depicted. It has been argued at length elsewhere how pagan imagery was perceived by Christian city dwellers and for what reasons it was preserved or removed.[109] Pagan statuary had been an integral part of the cityscape for so long that it could not be removed without drastically damaging the appearance of the monument and, by extension, its surroundings. It seems that most nymphaea dating back to imperial times largely preserved their statues until the end of antiquity. During excavations, honorific images and religiously neutral subjects, as well as mythological and pagan statues have all been retrieved.[110] Find ensembles such as those of nymphaeum F3 at

[106] Dirk Lenz, "Ein Gallier unter den Gefährten des Odysseus. Zur Polyphemgruppe aus dem Pollio-Nymphaeum in Ephesos," *Istanbuler Mitteilungen* 48 (1998), 237–48.

[107] Jacobs, "Pagan Statuary," 274–75.

[108] Ibid., 275.

[109] Jacobs, "Pagan Statuary."

[110] Ibid,, Appendix.

Fig. 22: The late antique statuary ensemble of the Antonine nymphaeum at Sagalassos (Photo: Authors).

Perge, or the Hadrianic nymphaeum at Sagalassos represent a large part of the original display.[111] Conversely, the ensembles once decorating the Apollo temple nymphaeum and Tritons' nymphaeum at Hierapolis, the nymphaeum of the main gate at Side, or the otherwise very well preserved Severan nymphaeum of Gerasa were non-existent upon excavation.[112] In all likelihood, they were stolen at a later time and burned in limekilns.[113]

Active Preservation and Minor Adaptations of the Hydraulic Apparatus

As utilitarian structures, fountains required regular maintenance of their hydraulic apparatus in order to function properly. Technical alterations could also be made to improve the comfort of water consumers, or as adaptations to new conditions, such as reduced availability of natural water or reorganization of the urban water network of which they were part. These alterations to the hydraulic apparatus, which unsurprisingly were concentrated around the

[111] For Perge, see Mansel, "Bericht über Ausgrabungen und Untersuchungen in Pamphylien in den Jahren 1957–1972," *AA* (1975), 91–92; Idem, "Nymphäen," 370; Sagalassos, see Mägele, Richard, Waelkens, "Late-Hadrianic Nymphaeum," 481–97.

[112] Apollo temple nymphaeum: Daria De Bernardi Ferrero, "Alcune considerazioni sul ninfeo di Hierapolis antistante il Tempio di Apollo," in Friesinger, et al., *100 Jahre,* 695–702; Dorl-Klingenschmid, *Prunkbrunnen*, 193–96, cat. no. 34; Campagna, "Monumental Fountains," 387–96. Tritons' nymphaeum: Dorl-Klingenschmid, *Prunkbrunnen*, 196–97, cat. no. 35; Campagna, "Monumental Fountains," 387–96. Side: n.91 above. Gerasa: Clarence Stanley Fisher, "Description of the Site," in Carl Hermann Kraeling, ed., *Gerasa: City of the Decapolis* (New Haven, 1938), 21–22; C. Bradford Welles, *Gerasa: City of the Decapolis; The Inscriptions* (New Haven, 1938), 68–71.

[113] Jacobs, "Pagan Statuary," 291–92.

basins and parapets, were rather diverse. The modifications most frequently encountered are reviewed below.

1) Alterations to Fountain Basins

The size of water basins was often adapted, both positively and negatively. A few Hellenistic stoa-type fountain-houses had already undergone an important increase of their basin volume during the Roman period. This was the case at Magnesia-on-the-Maeander, where the late second-century BCE fountain-house was said to have been "transformed into a reservoir during the Byzantine period."[114] The 1.30m high parapet originally inserted between the intercolumniations of the inner order was moved to the columns of the facade, thereby doubling the volume of water inside the basin. The so-called fountain of Vespasian at Caunus in Caria underwent the same changes.[115] Yet it is worth mentioning that other fountains of this type remained unaltered in terms of capacity. At Ephesus, the small Hellenistic fountain-house near the theatre was enlarged but the size of its basin remained the same.[116] Despite the fact that it was now supplied by an aqueduct,[117] the capacity apparently was not adapted.

Another way of modifying the capacity of a fountain was to add secondary drawing basins in front of the original one. Secondary drawing basins could take the shape of either elongated, shallow basins arranged along the main drawing basin, or of semicircular or rounded containers inserted between the vertical slabs of the frontal parapet. The so-called Fountain of Caracalla at Laodicea is an exemplary illustration of this practice, although it remains difficult to date.[118] When this fountain was built, possibly in the Severan period,

[114] Carl Humann, "Magnesia am Maeander. Bericht über die Ergebnisse der Ausgrabungen der Jahre 1891–1893" (Berlin, 1904), 135–37; Dorl-Klingenschmid, *Prunkbrunnen*, 212, cat. no. 58.

[115] The name traditionally given to the fountain is misleading, as it was in fact built in the third century BCE. Cengiz Işık, *Das Brunnenhaus an der Hafenagora* (Ankara, 1994); Dorl-Klingenschmid, *Prunkbrunnen*, 201–02, cat. no. 42.

[116] Wilhelm Wilberg, *Das Brunnenhaus am Theater* (Vienna, 1923), 266–73; Scherrer, *Guide*, 162; Dorl-Klingenschmid, *Prunkbrunnen*, 178–179, cat. no. 15; Scherrer, "Fernwasserversorgung," 50; Hilke Thür, "Öffentliche und private Wasserversorgung und Entsorgung im Zentrum von Ephesos," in Gilbert Wiplinger, ed., *Cura Aquarum in Ephesus: Proceedings of the Twelfth International Congress on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Ephesus/Selçuk, Turkey, October 2–10, 2004* (Leuven/Paris/ Dudley, MA, 2006), 65.

[117] Scherrer, "Fernwasserversorgung," 50, no. 5.4; ibid., 52, and Thür, "Öffentliche und private Wasserversorgung," 65 and n.2, have divergent opinions concerning the supply of the fountain.

[118] Jean Des Gagniers, Pierre Devambez, Lilly Kahil, René Ginouvès, *Laodicée du Lycos. Le nymphée. Campagnes 1961–1963* (Québec, 1969), 52–60, 130–35 ; Thomas Corsten, *Die Inschriften von Laodikeia am Lykos 1* (Bonn, 1997), no. 16–18, 20; Reinhold Merkelbach, Josef Stauber, *Steinepigramme aus dem griechischen Osten. I. Die Westküste Kleinasiens von Knidos bis Ilion* (Stuttgart und Leipzig, 1998), 277–81; Dorl-Klingenschmid, *Prunkbrunnen*, 211–12, cat. no. 57; Claudio Negrelli, "Il complesso del ninfeo negli scavi Cadanesi 1961–1963: una rilettura delle fasi tardoantiche e bizantine," in Giorgio Bejor, ed., *Laodicea di Frigia II. La ricognizione*

it was provided with three basins. The parapet of the central basin was 1.35m high and up to 1.20m thick, which severely hampered the drawing of water initially.[119] To remedy this, four horseshoe-shaped secondary drawing vessels were inserted in the upper part of the parapet in a second phase of building. Still later, the central basin was fronted by two shallow, narrow drawing basins, which encroached upon the street pavement.

In contrast, the size of fountain basins could also be reduced. At Pergamon, the basin of the early first-century fountain in the *temenos* of the Demeter temple[120] was shortened. Although the roughly trapezoidal basin initially fronted the whole length of the facade, "in the Byzantine period,"[121] its length was limited to the central exedra (Fig. 23). This meant a diminution of more or less two-thirds compared to the original length. At Apamea-on-the-Orontes, the water volume contained by the drawing basin of the south nymphaeum was reduced via a mass of concrete.[122] Because a comparable phenomenon was observed in the adjacent latrines,[123] this intervention may indicate adaptation to water stress. These two examples are now seen as responses to the massive earthquakes that affected the city in the course of the sixth century,[124] which would have also cut the aqueduct. Balty noted a widespread reappearance and renovation of public and private cisterns throughout the same period.[125] The

2000 (Padua, 2004), 223–31; Celal Şimşek, Mustafa Büyükkolancı, "Die Aquädukte und das Wasserverteilungssystem von Laodikeia ad Lycum," in Gilbert Wiplinger, ed., *Cura Aquarum in Ephesus: Proceedings of the Twelfth International Congress on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Ephesus/Selçuk, Turkey, October 2–10, 2004* (Leuven/Paris/Dudley, MA, 2006), 137–46; Celal Şimşek, *Laodikeia (Laodikeia ad Lycum)* (Istanbul, 2007), 73–79, 141–166, here 158–63.

[119] Although Des Gagniers, *Laodicée*, 20, has postulated the presence of frontal spouts that were removed when the configuration of the basin was modified.

[120] Carl Helmut Bohtz, *Das Demeter-Heiligtum* (Berlin, 1981), 15–16, 56–60; Wolfgang Radt, *Pergamon. Geschichte und Bauten einer Antiken Metropole* (Darmstadt, 1999), 180–86; Dorl-Klingenschmid, *Prunkbrunnen*, 224–25, cat. no. 81.

[121] Bothz, *Demeter-Heiligtum*, 16.

[122] Jean-Charles Balty, "Problèmes de l'eau à Apamée de Syrie," in Pierre Louis, Françoise Métral, Jean Métral, eds., *L'homme et l'eau en Méditerranée et au Proche Orient. IV. L'eau dans l'Agriculture* (Lyon, 1987), 9–23; Andreas Schmidt-Colinet, "Die sogennante Maison à Atrium," in Jean-Charles Balty, ed., *Apamée de Syrie. Bilan des Recherches Archéologiques 1973–1979. Aspects de l'Architecture Domestique d'Apamée. Actes du Colloque Tenu à Bruxelles les 29, 30 et 31 Mai 1980* (Brussels 1984), 141–50; Idem, "Skulpturen aus dem Nymphäum von Apamea/Syrien," *AA* (1985), 119–33; Andreas Schmidt-Colinet, Ulrike Hess, "Das Nymphäum von Apamea in Syria," *Forum Archaeologiae* 36/IX/2005 (2005), <http://farch.net>. The south nymphaeum was built in the second half of the second century. It featured a two-storeyed horseshoe-shaped columnar facade lined by a channel-like water basin framing a central open space. Schmidt-Colinet, "Maison à Atrium," 149, mentions the fact that two-thirds of the total volume of the basin was concealed.

[123] Ibid., 145–47.

[124] Ibid.

[125] Balty, "Problèmes de l'eau," 21–22.

Fig. 23: Later parapet in the central apse of the fountain in the temenos of the Demeter temple at Pergamon (Photo: Authors).

late first, early second-century monumental fountain of Bosra underwent similar changes.[126] At an unknown date, the level of the water in the main basin was raised. As a consequence, the nine spouts previously filling the lower basin were discarded and replaced by grooves cut into the top surface of the parapet. In the early fourth century, the latter went out of use after a course of re-used blocks was placed on top of it. Water then flowed over as a curtain-shaped cascade into the frontal secondary drawing basin.

2) Alterations to Fountain Parapets

Parapets were the quintessence of the water basin. More than any other hydro-technical element, they illustrate the close contact between the fountain and its users, as well as the subsequent adaptations and flexibility of this

[126] Jean-Marie Dentzer, Pierre-Marie Blanc, Thibaud Fournet, "Le développement urbain de Bosra de l'époque nabatéenne à l'époque byzantine: bilan des recherches françaises 1981–2002," *Syria* 79 (2002), 116–21.

Fig. 24: Fountain along the sacred way to the asklepieion of Pergamon (Photo: Authors).

relationship, through a myriad of details. Unsurprisingly, the parapet is thus the chief hydraulic apparatus element on which the majority of later alterations can be observed. Various kinds of cuttings, grooves, holes, and pipe connections point to the progressive adaptation of parapets to suit consumers' needs. A distinction should be made between traces resulting from the everyday use of a fountain—the wear ruts generally present on the upper, inner side of parapets—and punctual adaptations affecting either the water flow or its drainage from the basin.

The fountain-house along the sacred way to the asklepieion at Pergamon exhibits many of these later alterations (Fig. 24).[127] Except for the standard worn zones on the upper inner face of the parapet slabs, a series of both

[127] Oskar Ziegenhaus, "Hallenstrasse," in *Die Ausgrabungsarbeiten zu Pergamon im Jahre 1965*, *AA* 81 (1966), 448–455; Oskar Ziegenhaus, Gioia De Luca, *Das Asklepieion. 2. Teil. Der nördliche Temenosbezirk und angrenzenden Anlagen in hellenistischer und frühromischer Zeit* (Berlin, 1975), 44–53; Gioia De Luca, *Das Asklepieion* 4. *Via Tecta und Hallenstrasse. Die Funde* (Berlin, 1984), 349; Otfried Deubner, "Pergamena," *Istanbuler Mitteilungen* 34 (1984), 345–54; Dorl-Klingenschmid, *Prunkbrunnen*, 225–26, cat. no. 83).

Fig. 25: Fountain along the sacred way to the asklepieion of Pergamon. Rear view of a parapet slab with rounded evacuation hole (Photo: Authors).

small and large openings which were pierced into the parapet as well as longitudinal grooves hollowed out in the slabs' top surface deserve attention. The latter were likely cut in order to let water overflow in the form of thin cascades, facilitating the drawing of water: vessels could be held vertically below the canalised water flow instead of being plunged into the basin, which required greater effort. Rounded holes with small diameters were cut through the worn zones of the parapet where the slabs were thinner. They may have received secondary lead pipes of small diameter or else might have functioned in the same way as the grooves. The pressure of water flowing into the basin was indeed sufficient to create small cascades (Fig. 25). Metal fittings likely completed the installation. The larger holes were pierced to supply a network of terracotta pipes and a stone channel running in the direction of the stylobate of the opposite portico and toward the southeast respectively (Fig. 26).[128] The two to three conduits were fixed on top of the

[128] De Luca, *Asklepieion*, 80–81.

Fig. 26: Fountain along the sacred way to the asklepieion of Pergamon. Large evacuation holes at the right extremity of the parapet (Photo: Authors).

street pavement by a series of reused blocks which included many statue fragments. Therefore, besides the maintenance of the building's basic function as a fountain, the presence of redistribution pipes made it a genuine redistribution point, or *castellum aquae*. Significantly, all pipes and holes of larger capacity were inserted at a particular height and not at the base of the parapet slabs. This suggests that water in the basin still reached a high level, meaning that direct drawing of water was still possible. Furthermore, the elevated position of the pipes in the parapet shows that the installation also worked as a settling basin. Tapping water at the top level indeed ensured that it would not contain sediments and dirt which accumulated at the bottom of the basin.

The 1.20m high parapet of the Antonine nymphaeum on the upper agora of Sagalassos[129] shows a similar set of grooves, holes and pipes that

[129] Mägele, Richard, Waelkens, "Late-Hadrianic Nymphaeum"; Waelkens et al., "The 1994 and 1995 Excavation Seasons at Sagalassos."

Fig. 27: Fixation point of a metal tap on the parapet of the Antonine nymphaeum at Sagalassos (Photo: Authors).

significantly modified the way water was evacuated from the basin. Originally, water overflowed as a uniform curtain-shaped cascade. Assuming this would have been rather inconvenient for consumers, the cascade was quickly replaced by other drainage facilities. On the right side of the parapet, a large hole surrounded by two smaller ones can be identified as the fixation point of a metal tap (Fig. 27).[130] The rudimentary installation ran through a groove cut into the parapet's top surface. Another groove immediately to the left was located in between two dowel holes which probably held a small quadrangular drawing basin applied against the outer side of the parapet (Fig. 28). Finally, two superimposed circular openings were pierced though the left extremity of the parapet (Fig. 29). The upper one can likely be identified as an overflow spout under which vessels could be

[130] Similar devices can be seen on the frontal parapets of the Severan nymphaeum F2 at Perge and the Triton's nymphaeum. Dorl-Klingenschmid, *Prunkbrunnen*, 109 and Abb. 69b (Perge).

Fig. 28: Possible fixation points of an external basin on the parapet of the Antonine nymphaeum at Sagalassos (Photo: Authors).

held vertically. The lower hole was used to fix a diversion pipe at a later date, evidencing a retargeting of water toward one or more subordinated consuming structures.

The Severan nymphaeum at Stratonikeia is a third example of such alterations.[131] A series of grooves, distinct from those described so far, can be observed on the left extremity of the parapet: five deep cuttings carved into the top surface of the last pillar and slab evacuated some of the water outside the secondary drawing basin, which did not cover the whole length of the main basin (Fig. 30). The presence of five parallel grooves suggests a system

[131] Dorl-Klingenschmid, *Prunkbrunnen*, 248–49, cat. no. 113; recent architectural reconstruction by Ibrahim H. Mert, "Die Tor- und Nymphaeumanlage von Stratonikeia," in Detlev Kreikenbom, Karl-Uwe Mahler, Thomas M. Weber, eds., *Urbanistik und Städtische Kultur in Westasien und Nordafrika unter den Severen* (Worms, 2005), 241–54.

Fig. 29: Evacuation holes at the western extremity of the parapet of the Antonine nymphaeum at Sagalassos (Photo: Authors).

of terracotta pipes to supply nearby buildings. Cuttings in the middle supplied the small secondary drawing basin while another groove filled a small quadrangular trough arranged against the right extremity of the latter (Fig. 31). These cuttings and pipes suggest that the overflow from the nymphaeum needed to be controlled at some point. Since the secondary drawing basin did not cover the whole length of the main basin, water needed to be channelled into canals in order to avoid flooding the sidewalk. Thus, this groove may simply have been a quick remedy for malfunctioning of the parapets. Yet, once again it is striking that the grooves were designed to catch water at the top of the basin's surface, guaranteeing water of good quality. This also demonstrates the constancy of the water level in the basin.

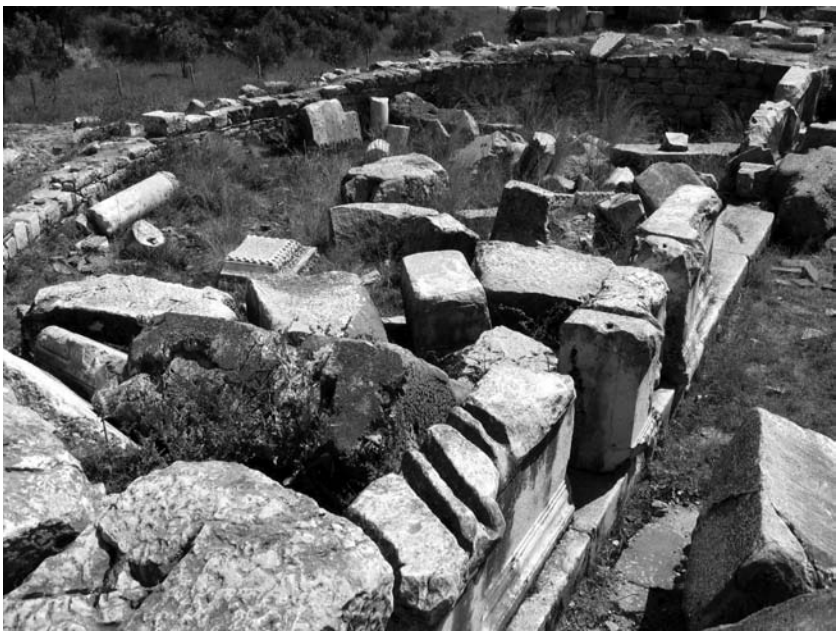

Fig. 30: Severan nymphaeum at Stratonikeia. Drainage grooves carved in the top surface of the main basin's parapet (Photo: Authors).

Fig. 31: Severan nymphaeum at Stratonikeia. Trough at the right extremity of the lower drawing basin (Photo: Authors).

3) Reduction of Water Effects

In two monumental fountains of Ephesus, the Hydrekdocheion of C. Laecanius Bassus[132] and the Nymphaeum Traiani,[133] partial reduction of the water supply affected the decorative qualities of the monuments. In the first fountain, two of the three pressure lines supplying the upper storey were blocked,[134] lessening the decorative impact of the spouting statues in the facade. In the Nymphaeum Traiani, the small dam guaranteeing the supply of the lateral cascades was dismantled at a later date, but a hole pierced in the east wall of the outlet system seems to have provided water to at least one statue to the east.[135] This indicates how the functioning of spouting statues was, at least in these two cases, diminished at a certain point in time.

From Fountain to Water Tank: Changes Affecting Fountain Function

The appearance of open-air drawing basins can be considered the major innovation of Roman fountain architecture. Nonetheless, at a certain point in their history, a number of Roman nymphaea experienced the reverse process and were converted into closed off water containers. As a result of this conversion, the function as a fountain could be severely altered, although such alterations did not always mean a complete loss of the structure's aesthetic qualities. Indeed, even when the reflecting water basin disappeared, the show facade and its statuary program often remained in place. In other cases, however, the transformation was so invasive that the fountain lost its pleasing appearance and simply became a plain water distribution facility. This remained exceptional and such an outcome could be attributed to various factors.

[132] Elisabeth Fossel, Gerhard Langmann, "Nymphaeum des C. Laekanius Bassus," *JÖAI* 50 (1972/73), Beibl. 30110; Robert Fleischer, "Skulpturen aus dem Nymphaeum des C. Laecanius Bassus," *JÖAI* 50 (1972/73), Beibl. 421–34; Elisabeth Fossel, Gerhard Langmann, "Das Nymphaeum des C. Laecanius Bassus in Ephesos," *Antike Welt* 14 (1983), 53–55; Scherrer, *Guide*, 77–78 n.29; Dorl-Klingenschmid, *Prunkbrunnen*, 186–187, cat. no. 24; Klaus Jung, "Das Hydrekdocheion des Gaius Laecanius Bassus," in Gilbert Wiplinger, ed., *Cura Aquarum in Ephesus: Proceedings of the Twelfth International Congress on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Ephesus/Selçuk, Turkey, October 2–10, 2004* (Leuven/Paris/Dudley MA, 2006), 79–86.

[133] Miltner, "XXIII. Vorläufiger Bericht über die Ausgrabungen in Ephesos"; Wrede, *Die spätantike Hermengalerie*, 82–84; Dorl-Klingenschmid, *Prunkbrunnen*, 188–89, cat. no. 26; Quatember, "Water Management"; Idem, "Neue Zeiten—Alte Sitten?"; Idem, *Das Nymphaeum Traiani in Ephesos*.

[134] Fossel, Langmann, "Nymphaeum des C. Laekanius Bassus," 306–07.

[135] Quatember, "Water Management," 75.

Reduction of the Original Aesthetic and Functional Properties

The Larissa nymphaeum at Argos,[136] erected under emperor Hadrian as an endpoint for the city's new aqueduct, partially lost its function as a public fountain in the second half of the third century.[137] The intercolumniations of the facade, between which originally stood parapet plates, were walled up and pierced with three water channels that took the water to other consuming buildings in the city center.[138] The operation thus reflected a more targeted use of water and implied a reduced ability, if not the end of the possibility, to draw water from the fountain. The status of 'fountain' was thus reduced to that of transitional settling basin, whereby the overflow mechanism between the upper and lower basin must indeed have guaranteed a good quality of water.

Nymphaeum F25 and nymphaeum F8 at Gortyn underwent more drastic alterations (Fig. 3).[139] The large basin of nymphaeum F25[140] was transformed into a massive reservoir covered by a longitudinal vault in *opus caementicium* which concealed part of the columnar facade. Three spouts located in the niches of the facade originally filled the basin, which was supplemented by two secondary drawing basins at either extremity of the facade. When the basin was covered, the spout in the central niche as well as the two secondary basins went out of use. Three groups consisting of two spouts were inserted in the raised parapet at a much higher level than their predecessors, which, as explained above, guaranteed a purer quality of water. They supplied three reused sarcophagi located on the ground. In this case, the function as public fountain was reduced but still maintained.

[136] Wilhelm Vollgraff, "Fouilles d'Argos," *Bulletin de correspondance hellénique* 44 (1920), 224–25; Idem, "Inscriptions d'Argos," *Bulletin de correspondance hellénique* 68–69 (1944/45), 397–400; Idem, "Fouilles et sondages sur le flanc de la Larissa à Argos," *Bulletin de correspondance hellénique* 82 (1958), 539–55; Walker, "Architectural Development," 60–71; Anastasia Oikonomou-Laniado, *Argos paléochrétienne. Contribution à l'étude du Péloponnèse byzantin* (Oxford, 2003), 7.

[137] Vollgraff, "Fouilles et sondages," 545.

[138] René Ginouvès, "Argos," *Bulletin de correspondance hellénique* 79 (1955), 323–28; Idem, "Sur un aspect de l'évolution des bains en Grèce vers le IVème siècle de notre ère," *Bulletin de Correspondance Hellénique* 79 (1955), 138–41.

[139] Goffredo Bendinelli, "Sculture rinvenute nel ninfeo presso il pretorio di Gortina (Creta)," *Annuario della Scuola Archeologica di Atene e delle Missioni Italiane in Oriente* I (1914), 137–48; Amadeo Maiuri, "Un Ninfeo presso il Pretorio di Gortina (Creta)," *Annuario della Scuola Archeologica di Atene e delle Missioni Italiane in Oriente* I (1914), 119–36; P. Perali, "Un Ninfeo presso le Grandi Terme e altri Ruderi di Fontane in Gortina (Creta)," *Annuario della Scuola Archeologica di Atene e delle Missioni Italiane in Oriente* 1 (1914), 149–59; Elena Fr. Ghedini, "Sculture dal Ninfeo e dal Pretorio di Gortina," in *Annuario della Scuola Archeologica di Atene e delle Missioni Italiane in Oriente* 47 (1985), 63–248; Alan A. Ortega, "Gortina: il Ninfeo presso il Pretorio," *Annuario della Scuola Archeologica di Atene e delle Missioni Italiane in Oriente* 48–49 (1986/87), 131–74. Although they apparently underwent similar alterations, because nymphaeum F25 was much better preserved than nymphaeum F8 only it will be considered in detail.

[140] 13.91 x 5.3m.

Fig. 32: Doric fountain at Sagalassos. View of the terracotta pipelines running over the western drawing basin. A first pipeline is visible in situ to the right; the second on the left has been removed (Photo: © Sagalassos Archaeological Research Project).

In the early sixth century, the Doric fountain at Sagalassos ceased to function as a public fountain.[141] The central courtyard and the U-shaped basin of the late first century BCE were carefully levelled with debris, upon which three terracotta pipelines where installed (Figs. 1, 32). They tapped water

[141] Marc Waelkens, E. Paulissen, B. Arikan, L. Gijsen, M. Martens, V. Mataouchek, K. Vandaele, "The 1993 Excavations in the Fountain House-Library Area," in Marc Waelkens, Jeroen Poblome, eds., *Sagalassos III: Report on the Fourth Excavation Campaign of 1993* (Leuven, 1995), 47–89; Waelkens et al., "The 1994 and 1995 Excavation Seasons at Sagalassos," 110–20; Waelkens et al., "The 1996 and 1997 Excavation Seasons at Sagalassos," 312–29.

Fig. 33: Doric fountain at Sagalassos. Drainage installations and secondary pipelines at the southwestern edge of the building. One of the settling basins is marked by an arrow (Photo: © Sagalassos Archaeological Research Project).

from the supply chamber behind the façade, where water from active underground springs was delivered through a settling basin. One of these pipelines ran southwards over the central courtyard, whereas the two others ran into the northern and western basins before transiting through two settling basins found at the southwest edge of the building (Fig. 33). The final destination of the pipes could not be identified. In any case, the channelling and targeting of water resources again suggests a well-considered supply to a few privileged installations. The city quarter in which the fountain-house was situated may have been less densely populated at this time. At any rate, it had lost much of its appealing character,[142] which may explain why the fountain was reduced to a basic water collection point.

[142] When the new urban defences were built in the late fourth and early fifth centuries, they excluded this city quarter: Lieven Loots, Marc Waelkens, Frans Depuydt, "The City Fortifications of Sagalassos from the Hellenistic to the Late Roman Period," in Waelkens, et al*Sagalassos* V, 598–631. Also in the late fourth or early fifth century, the Neon library, situated on the terrace just above the Doric fountain was violently destroyed. Before its final collapse, its remains were covered with fill containing ceramic waste, and food consumption and butchery refuse: Marc Waelkens,

Extensive Hydro-Technical Alterations with Aesthetic Maintenance

The late Hadrianic nymphaeum F3 at Perge experienced substantial alterations of its basin at a certain point in time.[143] The two lateral parapets were closed off by shallow brick walls, making it impossible to draw water from the sides (Fig. 34). The water could exit the basin in several possible manners. First, through the central cascade supplying the euripus or open-air channel running in the middle of the colonnaded street, which was maintained in its original state. Second, by consumers who could plunge their drawing vessels over the left section of the frontal parapet. And lastly, to the right of the basin, the remains of four terracotta pipelines inserted in grooves cut into the top surface of the parapet indicate that high-quality water was diverted to secondary consumers, demonstrating how the nymphaeum was partially transformed into a *castellum divisorium* (Fig. 35). In spite of this more pragmatic use of water, the aesthetically pleasing appearance of the fountain remained largely intact: the decorative two-storeyed facade was not touched and, as mentioned above, most of the fountain's statuary assemblage was retrieved amidst the ruins of the monument.

The parapets lining the euripus in the middle of the colonnaded street are also instructive: they were progressively invaded by secondary pipes inserted mostly at the base of the slabs and by drawing basins of varying sizes and shapes (Fig. 36). Thus, the channel itself became another distribution system from which the shops lining the colonnaded street, and possibly also domestic zones situated behind them, could benefit. These installations are clearly not the result of an organized program: their chaotic settings and the fact that most of the pipes were laid directly upon the street pavement suggests that they were arranged pragmatically according to specific needs. It is also likely that nymphaeum F3 was progressively encroached by terracotta pipes.

At Pisidian Antioch, the early first-century monumental fountain underwent similar alterations.[144] Conceived originally as a U-shaped stoa-type

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"Sagalassos. History and Archaeology," in Marc Waelkens, ed., *Sagalassos I: First general Report on the Survey (1986–1989) and Excavations (1990–1991)* (Leuven, 1993), 13–14; Marc Waelkens, Hande Kökten Ersoy, Kent Severson, Femke Martens, Selçuk Sener, "The Sagalassos Neon Library Mosaic and its Conservation," in Waelkens, et al., *Sagalassos V*, 435–37; D. Keller, "Social and Economic Aspects of Glass Recycling," in J. Bruhn, B. Croxford, D. Grigoropoulos, eds., *TRAC 2004: Proceedings of the Fourteenth Annual Theoretical Roman Archaeology Conference, Durham 2004* (Oxford, 2005), 65–78.

[143] İnan, "Porträtstatuen," 643–61; Mansel, "Nymphäen," 369–71; Dorl-Klingenschmid, *Prunkbrunnen*, 228–29, cat. no. 85.

[144] Mehmet Taşlıalan, *Pisidian Antioch* (Istanbul, 1991), 40–41; Jean Burdy, Mehmet Taşlıalan "L'Aqueduc d'Antioche de Pisidie," *Anatolia Antiqua 5* (Paris, 1997), 133–66; Stephen Mitchell, Marc Waelkens, *Pisidian Antioch. The Site and its Monuments* (Swansea, 1998), 175–99;

Fig. 34: Perge, nymphaeum F3. Closed off parapet section (Photo: Authors).

Fig. 35: Perge, nymphaeum F3. Traces of pipes draining water from the basin toward nearby consuming structures (Photo: Authors).

Fig. 36: Secondary supply pipes inserted in the parapets of the euripus at Perge (Photo: Authors).

fountain-house, the building was transformed into a genuine facade-nymphaeum at an undated moment. The central courtyard was turned into a basin limited at the front by a parapet and the three facade sections received an ornamental display of tabernacle architecture. This new configuration decreased the space for drawing water by ca.40 percent.[145] Possibly during the fourth or fifth century, the fountain was completely closed off and two stone channels were added to the front of the basin. This drastic modification implies that water was being directed toward other structures of the city and, by extension, that the fountain was turned into a *castellum divisorium*. Even

Eddie J. Owens, Mehmet Taşlıalan, "Pisidian Antioch: Nymphaeum," *Anatolian Archaeology* 4 (1998), 22–23; Dorl-Klingenschmid, *Prunkbrunnen*, 171–72, cat. no. 6; Eddie J. Owens, Mehmet Taşlıalan, "The Fountain-House at Pisidian Antioch and the Water Supply of the Roman Colony: Changes in Water Management and Use," in Christoph Ohlig, ed., *Cura Aquarum in Jordanien: Proceedings of the 13th International Conference on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Petra/Amman, 31 March—9 April 2007* (Siegburg, 2008), 301–12.

[145] Owens, Taşlıalan, "Fountain-House at Pisidian Antioch," 309.

though the direct utilitarian potential of the fountain had been reduced, the ornamental character of its facade was presumably still maintained.

Toward a New Culture of Water Management in Late Antiquity?

The various technical alterations reviewed above provided a pragmatic, adequate response to specific, localized needs. Nevertheless, the fact that similar modifications can be observed in various regions of the eastern Mediterranean suggests the appearance of new trends in water management during Late Antiquity. Examining these technical alterations in the wider context of urban water distribution can help to clarify whether or not urban water networks decayed, and whether or not this occurred in relation to water shortage. The impression that aqueducts and other related structures were no longer well maintained has often strengthened the idea of decline associated with the late antique city. Even if this occurred at some point in the later history of a number of cities, for instance, also at Rome itself,[146] it will be argued hereafter that a general decline is hard to validate based on the study of public fountains alone.

Meaning and Implications of Functional Alterations

Both shortage and surplus resulted from an imbalance between natural supply and human demand. A reduction of the supply or a diminution of the capacity of the basin (for instance, through the placement of a new parapet decreasing the basin's size) occurred quite frequently. Yet a reduction of capacity did not necessarily imply a negative adaptation: reducing the volume of the basin could improve the speed of flow and, therefore, the quality of the water, which would be renewed more quickly instead of stagnating longer in a larger basin. In other words, the fountain could become more efficient. Only a long-term study of aqueduct discharge could clarify whether or not water shortage triggered the diminutive adaptation of receiving structures.

The increase of the fountain's total storage capacity is one of the most frequently attested transformations. It affected fountains of all sizes, from smaller Hellenistic stoa-type fountain-houses to large nymphaea such as those of Gortyn, in which the basins were turned into reservoirs. It is worth remembering that, in the case of nymphaeum F25, water drawing was still possible

[146] Katherine W. Rinne, "Aquae Urbis Romae: An Historical Overview of Water in the Public Life of Rome," in Nathalie de Haan, Gemma C. M. Jansen, eds., *Cura Aquarum in Campania: Proceedings of the Ninth International Congress on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Pompeii, 1–8 October 1994* (Leiden, 1996), 145–52. See also Robert Coates-Stephens, "The Walls and Aqueducts of Rome in the Early Middle Ages, A.D. 500–1000," *The Journal of Roman Studies* 88 (1998), 166–78.

via a series of spouts in the renewed parapet, while recycled sarcophagi were used as secondary basins. Intentional increase of the basin's size is difficult to interpret on its own. It represented a quantitative improvement and, at the same time and even more importantly, created a larger buffer capacity in case of shortage or surplus.[147] Likewise, the addition of one or more secondary drawing basins can be considered a positive adaptation: this recurrent phenomenon was primarily intended to allow improved access for growing numbers of water consumers. It also increased the overall buffer capacity of the fountain by augmenting its total storage capacity. In that sense, the successive modifications made to the basins of the Fountain of Caracalla at Laodicea reflect a positive answer to consumers' demands. The different formulas adopted in that case over more or less one and a half centuries indeed demonstrate a willingness to facilitate the simultaneous drawing of water by a larger number of people.

In general, late antique parapets appear much less "sterile"[148] than their early imperial predecessors. The insertion of pipes into the parapet retargeted part of the water resources toward distant structures. This operation could hamper the functionality of the fountain by making one or more sections of the parapet less easily accessible, as was the case at nymphaeum F3 at Perge. In many cases, the final destination of the pipes remains unknown. It seems reasonable to postulate that they were intended to supply small or medium-sized secondary consumption structures, such as shops, workshops, and houses. Such alterations made water directly available where it was needed and thereby demonstrated an increased flexibility and greater efficiency in the means of water distribution. Likewise, some of the holes, grooves, and other traces found on parapets could be interpreted as a pragmatically inspired willingness to increase the comfort of water consumers: for instance, by vertically tapping under a spout to replace drawing water directly from the basin to enhance efficiency. There is no solid reason to evaluate these successive alterations as negative evolutions.

Throughout this series of structural and technical alterations, water quality obviously remained a constant concern. The almost systematic habit of letting water overflow guaranteed water purity. For this purpose, pipes were inserted high up in the parapet slabs in order to avoid the dirt accumulated on the bottom of the basin. Furthermore, the settling basins added to the pipes tapping water from the Doric fountain at Sagalassos imply that a high water quality was required.

[147] See below.

[148] Following an expression used by Dorl-Klingenschmid, *Prunkbrunnen*, 105, on the Antonine nymphaeum at Sagalassos.

As stated above, the dating of these technical alterations remains problematic. Consequently, grouping these modifications under the heading "late antique water management" remains risky. For instance, it could also be possible that some of these adaptations occurred shortly after the structure's construction, perhaps as a quick response to uncomfortable or deficient installations. Further, even if similar adaptations of the hydraulic apparatus were observed over wider geographic regions, it would remain arduous to assess whether or not these modifications reflect general, simultaneous tendencies or whether they respond to specific, local problems. It should be stressed that adaptations made at the level of the fountain did not necessarily reflect a large refurbishment of the water network to which it belonged; such changes could also represent a response to a specific need in a specific area. The best way to evaluate the adaptations to fountains is to consider the evolution of the entire water network to which they belonged.

Urban Water Management in Late Antiquity

Because every water network is a marker of urban change,[149] the study of fountains can reveal larger urban transformation at the level of the city, or at least within city quarters. This also applies to Late Antiquity: the efforts to maintain an aqueduct should be considered as a sign of the ongoing vitality of the urban community.[150] The frequent, thorough redeployment of water distribution policies, for instance after catastrophic events, is extremely interesting: the re-establishment of a steady water supply must have been of the utmost importance.[151] Together with the repair of major and secondary supply lines, the re-establishment of efficient public fountains can be expected to have been a high priority. In case of other internal or external problems, for instance, those related to unstable discharge of local springs or raiders threatening to interrupt long-distance aqueducts, other solutions needed to be implemented. Increased storage capacity and diversification of water sources could have been an adequate response. As such, these interventions are not necessarily signs of water shortage, but they often indicate the presence of a risk factor. This nuance is essential: only a thorough diachronic analysis of the global water supply strategy of a settlement can provide a correct answer to the question of shortage. Unfortunately, such a diachronic inquiry is limited

[149] Giorgi, "Water Technology at Gortyn," 314–15.

[150] Femke Martens, "The Diachronic Research of Urban Water Management at Sagalassos (SW Turkey)," in Gilbert Wiplinger, ed., *Cura Aquarum in Ephesus: Proceedings of the Twelfth International Congress on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Ephesus/Selçuk, Turkey, October 2–10, 2004* (Leuven/Paris/Dudley, MA, 2006), 165–74, at 182–83.

[151] Winter, *Staatliche Baupolitik*, 98.

to few well-documented cities. The divergent evolutions of the water networks of Gortyn and Sagalassos examined hereafter provide a valuable framework with which to understand the various adaptations visible at the level of monumental fountains.

The late sixth-, early seventh-century phase of the water network of Gortyn, which has recently been restudied by Giorgi,[152] provides an outstanding example of active preservation (Fig. 3). The system was laid out in the second century. It comprised a long-distance aqueduct and an intra-urban distribution network composed of three or four main branches, a series of *castella divisoria*, and large water-consuming structures, and featured the massive nymphaea F25 and F8 discussed above along with two bath-gymnasium complexes.[153] A first alteration of the system likely occurred in the late fourth century, possibly after an earthquake struck the city in 365.[154] In the late sixth and early seventh centuries, the water distribution network was severely altered once again. The original aqueduct was maintained, with the exception of one of the urban branches, which was cut off.[155] The underground pipe system was partially abandoned, however, and was replaced by a new network of fifty-one small cistern-fountains directly supplied from the aqueduct branches. These fountains were clustered in the three zones of the urban center where occupation continued.[156] Additionally, larger reservoirs have been found, some of which functioned as the end stations of aqueduct branches.[157] The transformation of the two second-century nymphaea in massive containers seems to have occurred contemporarily with the late sixth- and early seventh-century phase of the water network.[158]

In order to address the question of water shortage at Gortyn in this later period, four factors are essential to consider: the original aqueduct was maintained and restored; one of its branches was abandoned; the storage capacity of the network was likely increased by means of new reservoirs, including the transformed nymphaea F25 and F8; and the spatial repartition of the water resources was made more efficient by building cistern-fountains that fulfilled the needs of the population in a more pragmatic manner than the few large, nucleated nymphaea had ever achieved. This network of new fountains

[152] Mario Pagano, "Recherches sur l'aqueduc romain de Gortyne (Crète)," in Gilbert Argoud, ed., *L'eau et les hommes en Méditerranée et en Mer Noire dans l'Antiquité. Actes du congrès international, Athènes, 20–24 mai 1988* (Athens, 1992), 279–92; Giorgi, "Water Technology at Gortyn."

[153] Giorgi, "Water Technology at Gortyn," 293–96.

[154] Ibid., 296–97.

[155] Ibid., 297.

[156] Pagano, "Aqueduc romain de Gortyne", 281.

[157] Giorgi, "Water Technology at Gortyn," 301, 306.

[158] Ibid., 313–14.

testifies directly to the ongoing vitality of the city's distribution system. It is striking, however, that both the new system of street fountains and the transformed monumental nymphaea constituted a series of reservoirs of various scales, which were even further supplemented by massive isolated reservoirs. This wide array of structures suggests that one felt it necessary to store water, probably as a response to shortage. Yet considering the fact that the outflow of the aqueduct remained stable well into Late Antiquity[159] and that the inhabited area, at least as reflected by the location of the cistern-fountains, was more restricted, the presence of surpluses could equally be postulated. In that case, it is possible that the reservoirs, and hence the nymphaea, were meant as precautionary measures. It is worth emphasizing that without human intervention the flow of a gravity-driven aqueduct cannot be interrupted:[160] buffer elements are therefore required to collect the excess water without flooding the city in case of higher discharge. Some of the cistern-fountains were indeed equipped with overflow mechanisms,[161] suggesting that there was sometimes too much water arriving to them. In other words, the late sixth- and early seventh-century reorganization of Gortyn's water supply, instead of indicating a decline in water management, might actually represent the opposite. The study of late fountains and related infrastructure reveals at least that the system was more supple, better targeted, and more closely related to human activities than it had been previously.

Let us now compare this to the water distribution network of Sagalassos in the sixth century (Fig. 1).[162] The changes observed here are equally drastic, but more difficult to interpret. From the early imperial period onwards, Sagalassos was progressively equipped with at least five aqueducts.[163] Most of them were probably built for the four monumental fountains and the massive

[159] Ibid., 315.

[160] Yehuda Peleg, "Castella are not Reservoirs," in Gilbert Wiplinger, ed., *Cura Aquarum in Ephesus: Proceedings of the Twelfth International Congress on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Ephesus/Selçuk, Turkey, October 2–10, 2004* (Leuven/Paris/Dudley, MA, 2006), 343–47.

[161] Giorgi, "Water Technology at Gortyn," 306–07.

[162] On the water system of Sagalassos, see Femke Martens, "Urban Water Management at Sagalassos: Studying Urban Development from an Hydrological Perspective," in Karel Demoen, ed., *The Greek City from Antiquity to the Present: Historical Reality, Philosophical Concept, Literary Representation* (Leuven, 2001), 49–86; Idem, "Diachronic Research"; Idem, "Water Abundance and Shortage at Sagalassos (SW-Turkey)," in C. Ohlig, ed., *Cura Aquarum in Jordanien: Proceedings of the 13th International Conference on the History of Water Management and Hydraulic Engineering in the Mediterranean Region, Petra / Amman, 31 March—9 April 2007* (Siegburg, 2008), 247–62; Femke Martens, Julian Richard, Eddie J. Owens, Marc Waelkens, "The Interdisciplinary Research at Sagalassos and the Implications for the Study of Urban Water Networks," in Eddie J. Owens, ed., *The Water Systems in Pisidian Towns* (Cardiff, forthcoming).

[163] Eddie J. Owens, "The Aqueducts of Sagalassos," in Waelkens, Poblome, *Sagalassos* III, 91–113.

baths complex of the city over the course of the second century. The oldest aqueduct, however, may date back to the second quarter of the first century.[164] The earthquake that possibly struck the city around 500 caused a thorough reorganization of the supply network.[165] Within the city, the global impression is that the distribution system was maintained, although it underwent major adaptations.[166] The appearance of storage facilities in the city is striking: until the sixth century, Sagalassos was apparently not provisioned with cisterns. The city actually benefited from abundant water resources, with numerous local springs having been exploited since Hellenistic times. The newly built storage installations included the monumental basin arranged in front the upper agora's west portico described above as well as a water collection point and the small Byzantine fountain built respectively along the west and east sides of the northwest heroön.[167] Besides the appearance of storage facilities, water resources were increasingly diversified: some of these installations collected natural runoff water resulting from the melting of snow.[168] The appearance of these new collection and storage devices suggests that one tried to bypass or at least supplement the supply system of the imperial period, which was almost totally reliant on both local and more or less remote springs.

Yet the modifications observable on the parapets of the Doric fountain and the Antonine nymphaeum contradict the idea that these evolutions were negative. It has been argued above that such structural alterations did not necessarily indicate a decrease in water supply but, possibly, a significant retargeting of water resources. As a matter of fact, none of the monumental fountains in the city shows direct evidence of water shortage.[169] This does not mean, however, that the water supply of the city was not altered at all. Changes could have been brought about when one or more of the city's five aqueducts were damaged by tectonic activity, and this may have also disturbed the output of springs.[170] It would appear that the new water supply strategies observable in the sixth century do indeed point toward change: the appearance of storage facilities and the diversification of water sources suggest that one understood the risk of an unsteady water supply. Instead of

[164] Jacobs, Waelkens, "Colonnaded Street."
[165] Martens, "Diachronic Research," 182–83; Idem, "Abundance and Shortage."
[166] Martens, "Diachronic Research."
[167] Martens, "Abundance and Shortage," 255–56.
[168] Martens, "Diachronic Research," 183 n.37.
[169] We do not fully agree with the hypothesis previously defended by Martens, "Abundance and Shortage," who interpreted the holes at the left extremity of the parapet as evidence of water shortage.
[170] Martens, "Diachronic Research"; Idem, "Abundance and Shortage."

revealing shortage, these structures could simply have been built to prevent water shortage, be it a result of the political situation, warfare, or simply the fear of earthquakes. In addition, certain city quarters, notably the lower city, may have been less well supplied with water than in the past, possibly due to the disruption of one of the aqueducts. This could be the reason for the new targeting of water resources and the conversion of the Doric fountain.

A drastic change in water supply and management in the lower city is confirmed by the installation of the early Byzantine street fountain along the city's colonnaded street. Its water supply was located at the very bottom of its back wall. This channel predated the sixth-century fountain by several centuries: the water arrived from the west, passed underneath the bordering wall of the street, and continued underneath the street pavement toward the lowest quarters of the city. With its minimal width of 0.15m and height of ca.0.22m, it could transport a significant amount of water, and it is likely to have represented the final section of one of the western aqueducts of the city. When the present fountain was constructed, however, the eastern end of the channel, where it continues underneath the street pavement, was blocked and the section underneath the massive stone basin and the bordering wall of the street was filled in with rubble blocks. As a consequence, the water rose to the level of the new basin. Because the water spout of the basin was only some 0.04 by 0.05m large, the supply must have been severely reduced by this time.

These alterations all seem to point toward the necessity to solve problems within the water network. It should be emphasized, however, that such measures were not necessarily executed hastily. The investments appear as proactive measures aimed at avoiding the future repetition of problems rather than as improvised safety measures.

Yet the example of Gortyn suggests another likely alternative: a new tradition of water management may have been growing. Just as in the Cretan city, the targeting of water resources could represent a willingness to bring water closer to consumers. This was already suggested for the late changes to nymphaeum F3 at Perge. Also here, there is no indication that the discharge from the aqueduct was inferior compared to the past, except perhaps in the lower city. In other words, it could equally mean that at a certain time in Late Antiquity it was found more practical to bring water closer to where it was most needed. Under these conditions, one logically used fountains, the largest supply facilities in urban water systems, as the redistribution points. The best way to distribute the water in a flexible manner was to use the highest fountains of the system. At Sagalassos, the installations around the northwest heroön, the Antonine nymphaeum and the Doric fountain were the best located to allow a flexible and easy supply to all lower-lying areas. The fact that none of the monumental fountains located in the lower city show similar alterations is certainly no coincidence. It is thus possible that at that time, the

tradition of nucleated drawing points symbolized by monumental fountains became increasingly old-fashioned.

A Diversified Supply of Water?

Finally, we shall return to Ephesus. As described above, the number of fountains in this city was drastically increased during Late Antiquity (Fig. 2). In the past, it has been suggested that this proliferation of fountains should be taken as an indication of water shortage, in this particular case as the result of earthquakes in the second half of the fourth century.[171] There are, however, multiple arguments to counter this hypothesis. First of all, it has already been mentioned that the limited possibilities of actually drawing water from the basin indicate that not all fountains were primarily intended to be functional. Conversion more likely served representational and decorative purposes. Further, if the city was troubled by water shortages, why would one place up to four fountains next to each other? Indeed, at the lower and of the Embolos the former hexagon, the heroön, the gate of Hadrian, and the Celsus library were all eventually turned into water-related structures. Similarly, at Side, four adjacent fountains came into being: the late third-century aediculated nymphaeum was in due course complemented by the converted monument of Vespasian on the other side of the street and flanked by a large round basin, whereas some 10m further along the street simple niches with water basins were installed. Although the chronology of these interventions is even less well known than those at Ephesus, it is hard to imagine that this proliferation of fountains was the result of water shortage.

Moreover, as stated above, in previous centuries, decoration on parapets was almost invariably avoided, probably for functional reasons. In Late Antiquity, however, we see that somewhat more fountains were given decorated parapet slabs.

Further, if water had become sparser, one would expect an increase in the number of closed fountain-houses, in which water would have been better protected from sun and dust. Indeed, these reappear in Late Antiquity, but simultaneously with open water basins.[172] At Ephesus, at least, the conversion of the Celsus library was more or less contemporaneous with the construction of the more closed fountain near the stadium. Likewise, the Byzantine fountain at Sagalassos appears to have belonged to more or less the same period as the open basin on the agora, and at Side, the closed fountain gg

[171] Thür, *Hadrianstor*, 127–28.

[172] Bauer, *Stadt, Platz und Denkmal*, 299; Dorl-Klingenschmid, *Prunkbrunnen*, 64; Ladstätter, Pülz, "Ephesus in the Late Roman and Early Byzantine period," 401.

was not achieved any later than the more traditional nymphaeum hh. It thus seems that the reappearance of fountain-houses was a conscious choice, not a modification out of necessity. It may be meaningful that all three examples of more closed fountain-houses were located outside of the city centers, but along main streets and near city gates, thus at locations where many travelers would pass. In contrast, the more open basins were located in the city centers themselves. The utilitarian aspect may be more strongly present in fountain-houses, but certainly does not exclude decorative qualities, whereas the decorative use of water in city centers does not exclude a utilitarian use.

Fountains in Late Antiquity

In this contribution, we intended to collect the abundant bits of evidence concerning monumental fountains in Late Antiquity. In order to obtain a complete picture, both newly built fountains and the maintenance of earlier ones were considered. Moreover, the deliberate choice to combine a study of fountain architecture and decoration with research on their technical and utilitarian aspects allowed for a better understanding of the role of fountains in the rapidly evolving water management in late antique cities. Despite methodological difficulties related to the nature of the evidence and the bias of past research, in particular with regard to the documentation of later building phases, it was possible to draw a broad-ranging picture of the continuities and ruptures characterizing the late antique "fountain culture."

The majority of newly built late antique fountains continued earlier trends. After a brief interruption during most of the third century, the tradition of building monumental nymphaea in the imperial tradition resumed in the last decades of this century and continued until the early sixth century. Smaller investments, however, often affected the size of these monuments, which in Late Antiquity were generally limited to one storey and no longer exceeded a length of 20m, and on the whole they were less elaborately adorned. A few exceptions show that the taste for grand fountain facades had not disappeared entirely. In that respect, the nymphaea built on the fora of Constantinople, which could undoubtedly still benefit from imperial funding, appear as the legitimate followers of earlier traditions, with both elaborate architecture and statuary decoration. Thus, they deserve more interest than scholars have hitherto granted them.

In general, however, a popular way to avoid such costly investments while at the same time still achieving a satisfying visual rendering was to convert existing decorative façades into magnificent nymphaea, a practice which is attested from the fourth century onward. Multi-storeyed tabernacle facades, and to a lesser extent also porticoes, were preferable because of their easy formal adaptability. When the reused building did not have to be moved, the

conversion was limited to the addition of a water basin, often comprising parapets with new or reused relief decoration, and basic technical adaptations. Such practices demonstrate a particularly pragmatic concern for remaking new from old. In some cases however, the newly built water basins seem to have been more decorative than utilitarian, for instance at the agora gate of Aphrodisias. This sole example, however, cannot support the hypothesis of a general evolution from utilitarian to merely decorative monumental fountains in Late Antiquity. Indeed, a wide array of other types of fountains appear in the record. Closed fountain-houses, which had apparently been somewhat less popular in the early and high imperial period, reappeared in Late Antiquity with a slightly different typology than the stoa-type fountain-houses of pre-Roman times. Smaller water drawing basins disseminated at various points of city centers also reappeared in larger numbers. Yet, before concluding that water distribution had become more efficient compared to the past, one should bear in mind that the latest phase of water distribution networks is always the best documented. Therefore, the apparent lack of small installations besides a supposed predominance of early and high imperial nymphaea could simply be the result of a bias in data. As a whole, the architecture of late antique monumental fountains can be qualified as "continuity in pragmatism," a compromise between financial resources and the unbroken willingness to invest in water infrastructure in general, and traditional building types in particular.

Although these new fountains were still decorated, their adornment was more modest than it had been in previous centuries. New relief decoration was no longer spread over the façade of the building, but was instead concentrated on the fountain's parapet. In addition, newly built-fountains rarely still offered room for a statue decoration, and if they did the statues in question were more often than not taken from other locations in the city. Besides all these newly constructed fountains, older buildings also stayed in use during the centuries of Late Antiquity. Their existing architecture and decoration were largely respected, even though the iconography of their statuary program did not always align with the changed religious climate.

The active preservation of existing fountains further shows a concern for pragmatic efficiency. There is no reason whatsoever to postulate a general decline of water supply infrastructure, nor for fountains in particular, in Late Antiquity. The numerous alterations made to the hydraulic apparatus, extensively documented in this study, demonstrate that every fountain should be considered in its specific context. Despite the existence of similarities observable at different sites and in various regions, technical solutions were always a response to punctual, local circumstances. A very vivid pattern emerged from the study of the hydraulic apparatus. Parapets were not sterile and static entities: the cuttings, grooves, pipes and various other devices suggest that the flexibility and comfort of water consumers were taken into account. Even

if many of these elements might date from soon after the construction of the building, they reveal an attitude toward "water monuments" that was much more pragmatic than is generally assumed in architectural studies.

Monumental fountains can be considered as fairly reliable markers of the evolution of the water network to which they belonged. The general impression is that the water supply was more targeted in Late Antiquity and that large, nucleated water points lost some of their prior importance. In some cases, the public function of fountains was even annihilated by pipelines bringing water directly to consumers, houses or shops. Well-studied examples, such as at Gortyn, Sagalassos, or Ephesus, demonstrate the potential of studying late antique water networks. In the past, changes to the water network were seen as supporting the traditional view of decline. The majority of these changes, however, cannot be considered as simply reactive, nor as desperate remedies for a water supply that had been drastically diminished by factors of human or natural origin. Instead, they could as well have been proactive measures, and might have been intended to prevent problems from repeating themselves in the future. Such behavior should be interpreted as a sign of urban vitality and flexibility. Even if many of these late antique alterations may at first seem less aesthetically appealing or as technically more invasive, they offer evidence that cities remained very willing to maintain their urban infrastructure.

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